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TRANSCRIPT OF CONFERENCE ON POLLUTION OF INTERSTATE WATERS OF THE MISSISSIPPI RIVER, IOWA-ILLINOIS, HELD IN CLINTON, IOWA, MARCH 8, 1962

Public Health Service
Chicago, Illinois

1962

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Transcript Of Conference

on

POLLUTION OF INTERSTATE WATERS

of the

MISSISSIPPI RIVER

IOWA—ILLINOIS

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Clinton, Iowa March 8, 1962

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CONFERENCE IN THE MATTER OF POLLUTION OF THE INTERSTATE WATERS OF THE MISSISSIPPI RIVER

IOWA-ILLINOIS

Pursuant to notice, this conference convened at ten a.m. on Thursday, March 8, 1962, in the Oak Room of the Lafayette Hotel, Clinton, Iowa.

CHAIRMAN OF THE CONFERENCE:

Murray Stein
Chief, Enforcement Branch
Division of Water Supply and Pollution Control
Public Health Service
Department of Health, Education, and Welfare
Washington 25, D. C.

CONFEREES:

H. W. Poston
Regional Program Director
Water Supply and Pollution Control
Public Health Service, Region V
Chicago, Illinois

C. W. Klassen
Technical Secretary
Illinois Sanitary Water Board
State Office Building
Springfield, Illinois

P. J. Hauser, Director
Division of Public Health Engineering
Iowa State Department of Health
Des Moines 19, Iowa

CHAIRMAN STEIN: The conference is open.

This conference in the matter of pollution of the interstate waters of the Mississippi River, involving the States of Illinois and Iowa and the Department of Health, Education and Welfare, is being held under the provisions of the Federal Water Pollution Control Act. Under the provisions of that Act, the Secretary is required to call a conference of this type when on the basis of reports, surveys, and studies he has reason to believe that pollution of interstate waters subject to abatement under the Federal Act is occurring.

The Secretary of Health, Education and Welfare, having stated that on the basis of investigations, reports, surveys, and studies he has reason to believe that interstate pollution subject to abatement under the provisions of the Federal Act is occurring, has called such a conference covering the Mississippi River in the Clinton, Iowa, area.

The purpose of the conference is to bring together the State water pollution control agencies, the representatives of the United States Department of Health, Education and Welfare, and other interested parties to review the existing situation, the progress which has been made, and to lay a basis for future action by all parties concerned, and to give the states, localities, and industries an opportunity to take any remedial action which may be indicated under state and local law.

The conference mechanism is a time-tested and proved technique. It is used by many states informally in the normal conduct of business in the field of water pollution control. As long ago as 1921, the United States Supreme Court, in the famous interstate pollution case of New York against New Jersey, said, and I quote:

"We cannot withhold the suggestion, inspired by the consideration of this case, that the grave problem of sewage disposal presented by the large and growing populations living on the shores of New York Bay is one more likely to be wisely solved by cooperative study and by conference and mutual concession on the part of the representatives of the States so vitally interested in it than by proceedings in any court however constituted."

We strongly subscribe to the sentiments of the Supreme Court, and, as many of you know, we measure our success by the situations which are solved at the conference stage rather than by the court actions we bring.

Under Section 8 of the Federal Water Pollution Control Act, the Secretary of Health, Education and Welfare has notified the official state water pollution control agencies of the conference. These agencies are the Illinois State Sanitary Water Board and the Iowa Department of Health.

Illinois will be represented by Mr. Clarence Klassen, Technical Secretary of the Illinois State Sanitary Water Board. The State of Iowa will be represented by Mr. Paul Houser of the State Department of Health.

The Conferee of the Public Health Service is Mr. H. W. Poston, who is the Regional Program Director with headquarters in Chicago.

My name is Murray Stein. I am from Washington, D. C., headquarters of the United States Department of Public Health, Education and Welfare.

Representatives of these official agencies are, of course, privileged to bring whomever they wish to the conference and have them participate in it. However, the representatives of the two state agencies I have mentioned and the Department of Health, Education and Welfare constitute the Conferees. Under the law, this is a conference between state representatives and the representatives of the Department of Health, Education and Welfare.

The States and the Federal Government have responsibilities in dealing with interstate water pollution control problems. The Federal Water Pollution Control Act declares that the states have primary rights and responsibilities for taking action to abate and control interstate pollution. It has always been the policy of the Department of Health, Education and Welfare to give full recognition to this traditional role of the states. The function of the Department is to encourage the States in these activities. However, the Department of Health, Education and Welfare is charged by law with specific responsibilities in connection with interstate pollution control problems.

The Federal Water Pollution Control Act provides that pollution of interstate waters, whether the matter causing or contributing to such pollution is discharged directly into such waters or reaches such waters after discharge into a tributary of such waters, which endangers the health or welfare of persons in a state other than that in which the discharge originates is subject to abatement. The procedures for abatement are carefully set forth in the Federal Water Pollution Control Act. The conference will be useful in providing a clear picture of the problem, in delineating accomplishments and in indicating what still needs to be done, if anything, to correct the problem in these interstate waters.

Under the Federal Act, the Secretary is required at the conclusion of the conference to prepare a summary of it. The summary will be sent to all Conferees. The summary according to law must include the following:

1. Occurrence of pollution of interstate waters subject to abatement under the Federal Act.

2. Adequacy of measures taken toward abatement of the pollution.

3. The nature of delays, if any, being encountered in abating the pollution.

Subsequent to the holding of the conference, the Secretary of Health, Education and Welfare is required to make recommendations for remedial action if such recommendations are indicated.

A word about the conduct of the conference. A record and verbatim transcript will be made of the conference. Mrs. Virginia Rankin is making this verbatim report for the purpose of aiding us in preparing a summary and also providing a record of what is being said and done here. We will make copies of the summary and verbatim transcript of the conference available to the official state agencies represented here. For the purpose of maintaining relationships within a region and a state, we have found that this is the best way to handle distribution. All others who want to get copies of this material we expect will get in touch with their official state agencies. The reason for this is that we would prefer the people who are interested in this problem to follow their normal relationships in dealing with state agencies rather than coming directly to the Federal Government on these matters. This has worked successfully in the past, and we will be most happy to make this material available to the states for distribution.

All the Conferees will be called upon to make statements. The Conferees in addition may call upon participants they have invited to the conference to make statements also. At the conclusion of such statements, the Conferees will be given an opportunity to comment or ask questions, and at the conclusion of the other Conferees' comments or questions I may ask a question or so too. In the past, this has proved effective in developing a clear statement of the problem and in reaching agreements on equitable solutions.

At the end of all the statements, we will have a discussion among the Conferees and try to arrive at a basis of agreement on the facts of the situation. Then we will attempt to summarize the conference orally, giving the Conferees, of course, the right to amend or suggest modifications to the summary.

Now, when people are called on to make a statement by one of the Conferees, we would hope that they would come up to the table and mike here and make their statement from that point, and be sure to identify themselves and their organization for purposes of the record.

With that, I would like to call on Mr. Poston for the Department of Health, Education and Welfare. Mr. Poston.

MR. POSTON: I would like to first off introduce some of my staff here and some of the staff from Region VI.

First off I would call on Mr. Herb Clare, who is Regional Program Director for Water Supply and Pollution Control for Region VI, to introduce the people on his staff that he may care to.

MR. CLARE: Thank you, Mr. Poston. I would like to introduce first Mr. Frederick Erickson, Chief Engineer of our regional office, Region VI. Mr. Erickson is Associate Regional Director for Environmental Health Services out of our seven-state region.

Also Mr. Donald Townley, Chief of our Enforcement Section in Region VI. And Mr. Richard Hunsinger, one of Mr. Townley's engineers.

MR. POSTON: I have with me today Mr. Jack Rademacher, the Chief of the Enforcement Section for our Region V Water Supply Pollution Control Program, and Mr. McDonald, Program Representative. We also have Mr. Kittrell and Mr. Phil Coffey from the Sanitary Engineering Center.

In our efforts on this meeting we invited other Federal agencies to participate and to make a statement if they care to. Some of these agencies will make a statement and others are here as observers. I might read the list of names of the observers, with their organization.

There is the U. S. Coast Guard, Lieutenant Commander

Sturdy; the Bureau of Public Roads, Mr. J. L. Hirsch; the Small Business Administration, Mr. T. H. Welch; Soil Conservation Service, represented by Mr. Timothy Flattery; the Atomic Energy Commission, Mr. Donald Gardner; United States Attorney's office, Mr. Morehouse; the Bureau of Land Management, Mr. R. J. Kifer; Federal Power Commission, Mr. Ivan P. Berk; the Bureau of Census, Mr. Theodore Olson; Federal Housing Administration, Mr. Granville; and the Ninth Naval District, Great Lakes, Mr. McLaughlin.

Others of the Federal agencies will be introduced at the time when they are asked for their statement.

I think it is a privilege to be here today. It is a privilege because I think this conference can be beneficial to preserve the water resources in this area. I think it can promote the widest use of waters in the Mississippi, and it can promote reuse of the waters as opposed to abuse of these waters. This is one of our many efforts in the field of pollution control. The Public Health Service is interested in research, in grants to municipalities, in basic data on water supply and pollution control, comprehensive planning, enforcement, and other facets of pollution control.

I think one of the questions that was in many of your minds when you came here was specifically why are we here today, and I have several reasons why I feel we are here. One which Mr. Stein elaborated on is the Federal Water Pollution Control Act. As I pointed out previously, this Federal Water Pollution Control Act, which was first passed by Congress in 1948, called for enforcement action, it called for grants, it called for comprehensive plans, technical assistance, and research. In 1956, Congress felt the increased urgency of this problem and passed another act strengthening this, and then again in 1961 Congress, just last year, passed additional measures strengthening the Water Pollution Control Act. All of these things point to the urgency of the matter we are here to discuss today.

This isn't an overnight matter. This isn't something that we thought of in the recent past. Since the early fifties, studies have been made on the Mississippi River and conversations have been held with the state water pollution agencies concerning matters of pollution on the Mississippi River. In March of 1960 I was asked by Mr. Houser to sit with him while he discussed with the city officials in Clinton the urgency for abatement of pollution, and at that time I was asked what the Federal interests were in this matter and I told them that we had enforcement responsibilities and that we were interested in backing up the state in their abatement program. From 1960 until 1961 very little, if anything, was done towards abatement of pollution in this area. And in September I made a reconnaissance trip with some of my staff to look over the situation in the river, accompanied by officials of the State pollution agency, namely the State Health Department. And at this time we could see the sources of pollution, the open sewers, the industrial wastes coming out into the river. And I noticed in one of the pictures that is here today taken in 1958, it is possible to see from this photograph of the Department of Agriculture the black waste coming out of one of the industrial plants in the Beaver Slough area.

As a result of our reconnaissance trip in September of '61, it was decided that we should make a brief study of the situation, and for this purpose we asked Mr. Rademacher of our enforcement section to organize a survey in this area, and this was done in October of this past year.

All of these conferences were held with the knowledge of the state. We invited them and they participated to the extent of having some of their staff as observers and participants in some cases. This opportunity was offered both to the Iowa pollution agency as well as the Illinois pollution agency. Just a little bit later, I will ask Mr. Coffey to elaborate to you on the findings of this particular survey.

This matter has been brought to our attention repeatedly. It has been brought to our attention by individuals, it has been brought to our attention by organizations who are interested in maximum development of our water resource.

I think, finally, we are here today with a view that we can support the state agency in their efforts on water pollution control. These, I think, are the reasons that we are here today.

I would like now to ask Mr. Coffey to make his presentation relative to his findings in a study of the Mississippi River.

MR. COFFEY: Thank you, Mr. Poston.

Mr. Chairman and ladies and gentlemen. In view of the fact that this will be a moderately long presentation, and in deference to my weak arches, I have sought permission to give a portion of this presentation seated. I hope you won't infer any disrespect to you and will be tolerant of this weakness.

The report which I am about to read to you is based on a field survey made in this location last October and in a study of the history of all previous pollution abatement action, everything we could find. The report is intended to be strictly factual. We have tried to make it as impartial and fact-finding as we could to the end that you yourselves, with the facts before you, could decide what further action is necessary.

With that brief preamble, I will proceed with the report.

The Mississippi River reach below Clinton, Iowa, has a history of reported pollution extending back to 1943. Following a detailed study by the State of Iowa Department of Public Health in 1952, a report was prepared by that agency in July of 1954 and distributed to eleven public and private corporations which at that time were discharging untreated wastes into the Mississippi River and its tributaries near Clinton, namely:

The City of Clinton; the Clinton Wire Cloth Company; The Pillsbury Mills, Inc.; the Curtis Companies, Inc.; the Climax Engine and Pump Company; the Clinton Foods, now, I believe, renamed Clinton Corn Processing Company; Swift and Company; Interstate Power Company; The Collis Company; the Town of Camanche; and duPont.

Recommendations for reduction of river pollution were made, comprising in the cases of the two public corporations a minimum of "effective sedimentation, substantially complete removal of floatable solids and liquids, and reduction of toxic materials to less than lethal limits for aquatic life." A similar recommendation was made in respect to the private industrial corporation, with the option of making provision to connect to a municipal severage system wherever feasible. These recommendations were confirmed in a public hearing conducted by the State of Iowa, Department of Public Health, on December 16th of 1954. Progress in abatement of pollution having been determined in most instances unsatisfactory, the State of Iowa convened a second hearing October 26, 1961, in which the Cities of Clinton and Camanche and six industrial firms in the area were cited for pollution of the Mississippi River.

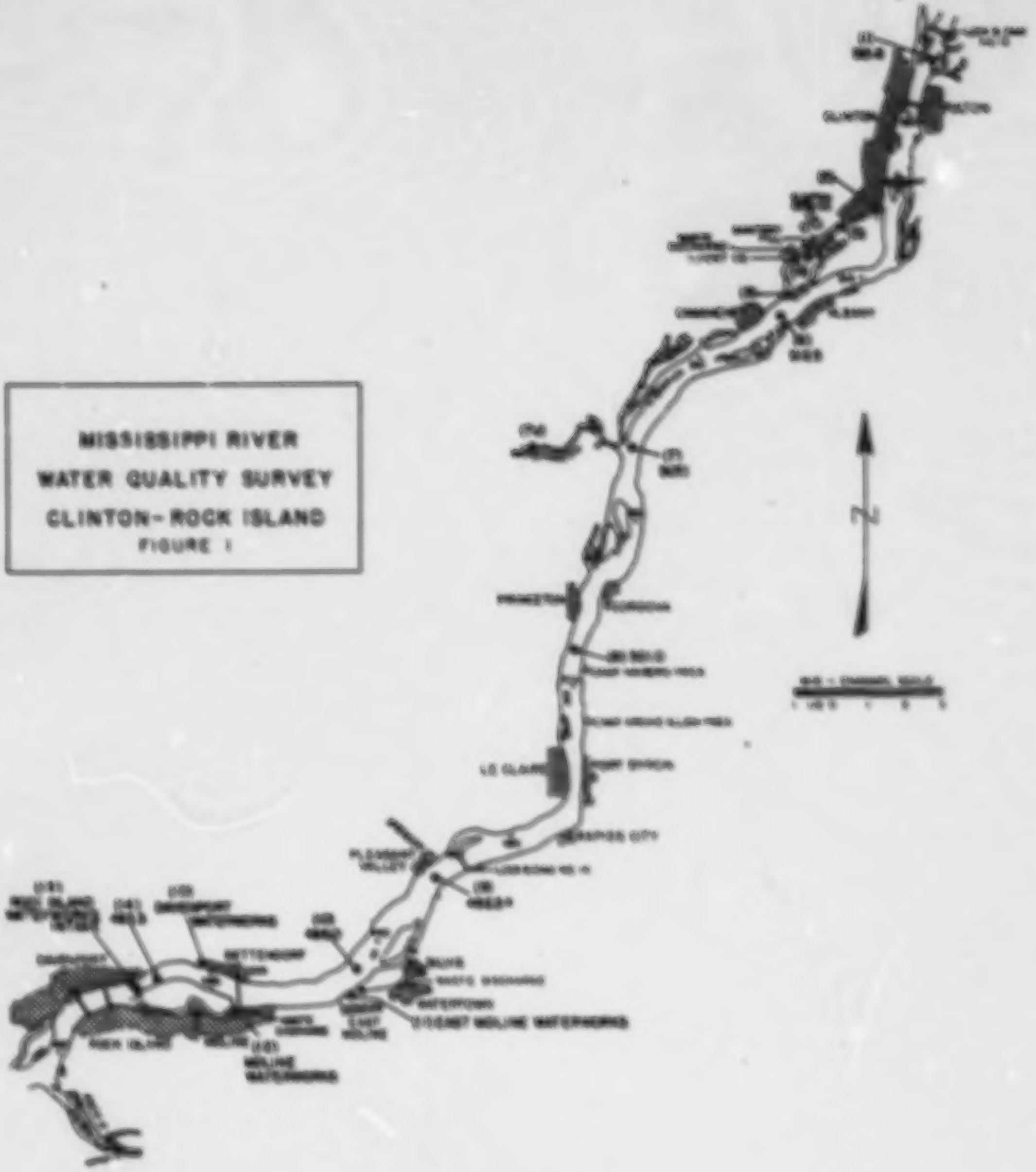
I think the next section stating the authorization for this survey has been exceedingly well presented by our Chairman, and with your permission I think I will skip that.

The field survey of water quality conducted by our organization was done between October 23rd and 31st last year in the 40-mile reach of the Mississippi from Dam 13 to Dam 15, as shown on the map--I believe all of you can see the large map--with particular reference to bacterial concentrations, dissolved oxygen content of the water, and biological indicators of pollution. Stream flows and laboratory data are given in an appendix, Appendix B in this report.

Samples for dissolved oxygen and coliform bacteria tests were collected daily, whenever the weather permitted, at seven sections on the main stem of the river, on the Wapsipinicon River at Iowa State Highway 67, and at four points along Beaver Slough, which, as you know, is a subsidiary channel just downstream from Clinton on the Iowa side, of course, of the river. At each of the seven sections or ranges on the main stem, samples were taken approximately at the three quarter-points of the channel. Beaver Slough, by the way, is of interest as the receiving water body for important waste discharges from Clinton Corn Processing Company and the duPont cellophane plant. In addition, daily samples were collected for bacterial examination near the river intakes of four major water treatment plants in the downstream end of the reach, that is the Cities of East Moline, Moline, Davenport-Bettendorf, and Rock Island. There is a description in the appendix of the report of those sampling points.

Now as to the area, and the scope of the survey. The principal river reaches involved are the pools formed by Dams 14 and 15 on the Mississippi River for a total river length of 39 miles. The survey began at a point about halfway between the Fulton Highway Bridge and Dam 13 and continued downstream into the Quad-Cities area. The southernmost point, I believe, was the City of Rock Island Waterworks Intake, which, as you know, is just above Dam 15.

In this reach there are sixteen communities which have direct frontage on this river stretch. Nine of them are in Illinois and seven in the State of Iowa. Thirteen of these sixteen have some form of sewerage system. The Illinois group has a total urban population of more than 118,000 and the Iowa towns combined about 139,000, or a total urban river front population of 257,000 or more than a quarter million people. The county populations which have nominal access to the river total 274,000 for Scott and Clinton Counties in Iowa, and in



MISSISSIPPI RIVER
WATER QUALITY SURVEY
CLINTON-ROCK ISLAND
FIGURE 1

CLINTON
CAMANCHE
ALBANY
PRINCETON
CORDOVA
LE CLAIRE
PORT BYRON
RAPIDS CITY
PLEASANT VALLEY
BETTENDORF
DAVENPORT
ROCK ISLAND
MOLINE
EAST MOLINE
WASTE DISCHARGE
WATERWORKS
MOLINE WATERWORKS
DAVENPORT WATERWORKS
N

Illinois about 210,000 for Whiteside and Rock Island Counties. The total is 485,000, nearly half a million.

Ten industries also use the river for waste water disposal. Of these, seven are in the area of Clinton-Camanche, two are on the northern edge of Bettendorf, and one is in East Moline. These industries reflect a wide diversity of operations, although the agricultural influence of the region is paramount. Corn and soybeans serve as raw materials for major processing operations in the Clinton area. Metal fabrication for the very concentrated farm equipment manufacturing complex is a prime factor in the economy of the Quad cities. In addition to the agriculturally-oriented industries, the biggest cellophane manufacturing plant we believe in the United States is located here in Clinton, and a major rolling mill for Alcoa, the Aluminum Company of America, is located in Bettendorf. Other operations significant in the economy of the area are grain milling, power production, meat and poultry packing, and, of course, the United States Arsenal at Rock Island.

Further industrialization is expected above Cordova. There are some 1,200 acres of land fronting on the Mississippi River which have been leased by the Northern Natural Gas Products Company. It is planned to locate a petrochemical plant here, using the natural gas pipeline crossing at that point as a source for raw material. Extensive water use for process and cooling operations is expected as well as an increase in river-borne freight traffic.

Now we come to consideration of water uses, beneficial uses of the Mississippi River in the reach of our study. We find that there are several very important ones: domestic water supply, industrial water supply and power production, commercial fishing, and, of course, many forms of recreation, boating, swimming, fishing, water skiing, aesthetic enjoyment of the waters, and finally, of course, industrial and municipal waste disposal are all highly developed uses of the water in this reach of the great Mississippi River.

In regard to domestic water supply, public water supplies are taken from the Mississippi for the cities of Bettendorf and Davenport, Iowa, East Moline, Moline, and Rock Island, Illinois, as well as the Government Arsenal at Rock Island, and the Rock Island Railroad Yard at Silvis, Illinois. A total of some 221,000 people in these communities depend upon the river as a domestic water supply source with 120,000 in Illinois and the remainder in Iowa. At present, that is at the

TABLE I

MUNICIPAL AND INDUSTRIAL WATER USERS

Community and Organization	Population Served	Pumpage MGD	Purpose
Clinton, Iowa			
Clinton Corn Processing Company	-	15.85	Cooling and Process
E. I. du Pont de Nemours	-	Undet.	Cooling and Process
Interstate Power Company	-	Undet.	Condenser
Silvis, Illinois			
Rock Island Railroad Yards	500	0.34	Boiler, Cooling and Drinking
East Moline, Illinois			
John Deere and Company	-	28.8	Condenser, Dust Collection
Municipal Water Works	21,500	2.76	Municipal
Moline, Illinois			
Municipal Water Works	42,705	6.0	Municipal
Bettendorf, Iowa			
Riverside Power Plant	-	187.0	Condenser
Aluminum Company of America	-	32.0	Cooling and Process
Davenport, Iowa			
Davenport Water Company	100,515	13.0	Municipal
Rock Island, Illinois			
Municipal Water Works	51,863	7.8	Municipal
Rock Island Arsenal	4,000	1.8	Drinking and Process
	221,083	295.35	

Turning now to the recreational uses in these pools as a major use of the river, boating, swimming, water skiing, hunting, fishing and camping are among the activities which the river makes possible. Although almost one-half million people in the immediate area have access to this river stretch, its recreational attractions also draw people from a much wider area, including the metropolitan areas of Chicago and Des Moines.

To indicate the extensive boating use made of the river, a survey of some of the important marinas and boat clubs showed that over 2,000 craft were docked at Clinton, Princeton and Cordova facilities during the last boating season. It is hard to arrive at an estimate of the value of this equipment, but we feel sure that it would exceed $3,000,000. This does not include the servicing costs for launching, storage, gas, oil, and the actual sports equipment necessary for fishing, hunting, and water skiing.

Organizations such as the YMCA, the YWCA, the Girl Scouts and Boy Scouts have established camp sites along the river in the Cordova to Port Byron area. Illinois also maintains a small state park, Illiniwek, below Dam 14. Both the YMCA and the YWCA use the river for swimming, and all organizations use it for canoeing, boating, fishing, and possibly water skiing. There are some 500 girls and 500 boys in the age group of eight to fourteen years who use the facilities of the YWCA and YMCA camps. The Girl Scouts have a swimming pool. The Port Byron troop of Boy Scouts use their location for camping and meetings only, although they do have boating facilities. The YMCA is raising $40,000 to construct a swimming pool. A primary justification voiced by these groups for constructing pools is that because of slimes and odor of the river water, the swimmers must take a soap and water shower after swimming in the river. The construction of swimming pools will not, however, eliminate exposure to the river, since boating, canoeing, and the challenge of a trans-Mississippi swim, which I understand is one of the achievement tests used by these youngsters, will remain as features of the camping programs.

Formations of fishing and boating clubs with memberships each measured in hundreds indicate the great current interest and the potential for the future. The Isaak Walton League Chapters in the area, that is Clinton and Davenport, as well as the State organization in Illinois have been very active in pressing for better recreational opportunities through improved water quality. Bank fishing and boat fishing are both very popular. During the hunting season, ducks, geese and other wild fowl visit the river as a way station on the flyway between Canada and the Arkansas wintering area. Duck hunting is, of course, a major autumn sport.

In addition to these recreational uses, there are many permanent homes as well as summer cabins occupying the shores on both sides of the river. Most of these have private boats or boat docks. It is difficult to assess in economic terms the aesthetic value to residents of frontage on the river, but we feel that it must be considerable. Otherwise, these sites would not be held in such high favor.

In regard to navigation, another reported use of the river, the commercial use, is reflected by the craft count maintained by the United States Corps of Engineers Lock and Dam 14 at LeClaire. During the 1961 season up through the end of September, a total of more than 8,637 craft had been locked through. That is, as you all know, I am sure, an abbreviated season. The waters are generally open in March, and the season closes in October or November. Of this total, 1,783 were commercial tows, indicating the heavy navigational use of the river at this point, and pleasure craft numbered 6,854, nearly 7,000 craft.

As to agricultural uses, we found little direct agricultural use in the form of irrigation or stock watering, but we do feel that there is a large potential for supplemental irrigation.

The river is also used very much for waste disposal by both municipalities and industries, some of which have no facilities, or only inadequate facilities, for reduction of the sewage and industrial waste load before it is discharged to the stream. Davenport and Bettendorf, Iowa, have a common treatment facility, but discharge the effluent to the Mississippi River below Dam 15, that is outside the reach we were considering. The City of Rock Island and the Rock Island Arsenal have a similar system which also leaves the area below Dam 15.

We have shown in two of the tables in this report the severed communities along the whole reach of the river, with the best estimates we could make of the organic and bacterial loadings discharged by these several plants. The basic information for these tables was taken from the 1957 Inventory, a nation-wide inventory of municipal and industrial waste facilities prepared by the U. S. Public Health Service. We also obtained a good

TABLE IIa

SOURCES OF SEWAGE DISCHARGED TO STREAM

Source	Sewered Population	Bacterial Population Equivalent To Stream	Per Cent of Total Discharge To Stream
Iowa			
Clinton	33,600	33,600	85.9
Clinton Corn Processing Co.	1,400	1,400	3.7
E.I. du Pont de Nemours and Co., Inc.	1,000 (1)	500 (5)	1.4
Clinton Wire Cloth Co.	15	15	
Curtis Companies, Inc.	Undet.	Undet.	
Dairypak, Inc.	50	25 (5)	
Maquoketa Co.	Undet.	Undet. (5)	0.1
Interstate Power Co.	20E	10E	
Pillsbury Mills Elevators	40	40	
Clinton Rendering Co.	15	15	
The Collis Co.	175E	175	0.4
Swift and Co.	175E	175	0.4
Camanche	1,500 (2)	1,500	3.8
Princeton	0	Undet. (6)	
LeClaire	1,500 (3)	1,500	3.9
Pleasant Valley	0	Undet. (6)	
Bettendorf	11,500 (4)	Undet. (7)	
Aluminum Co. of America	870	90 (8)	0.4
Davenport	89,000 (4)	Undet. (7)	
	140,860	39,045	100.0

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(1) Estimated - Based on U. S. Department of Commerce Bulletin, "Location of Manufacturing Plants." (1954)

(2) Town approximately 70% sewered.

(3) Sewage plant and sewerage system under construction.

(4) Part of Davenport systems discharges to plant below Dam 15.

(5) Septic Tank - Assume 50% reduction in bacterial load.

(6) No organized collection system - Discharge indeterminate.

(7) Storm water overflows and incidental waste discharges which cannot be estimated.

(8) Trickling Filter - Assume 90% reduction of bacterial load.

TABLE IIb

SOURCES OF SEWAGE DISCHARGED TO STREAM

Source	Sewered Population	Bacterial Population Equivalent To Stream	Per Cent of Total Discharge To Stream
Illinois			
Fulton	3,400	3,400(4)	6.6
Albany	640	640(4)	1.2
Cordova	0	Undet.(5)	-
Port Byron	1,150	1,150	2.3
Rapids City	0	Undet.(5)	-
Hampton	0	Undet.(5)	-
East Moline	24,000(1)	12,000(6)	27.4
Moline	32,000(2)	32,000	62.5
Rock Island	51,900(3)	Undet.(7)	-
	113,090	49,190	100.0

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(1) Based on 1960 census figures plus incremental industrial sanitary waste contributions plus packing house wastes. City is 90% sewered. Moline State Hospital included.

(2) Estimated north slope population. South slope drains to Rock River (10,000 population). Two major sewer outfalls - 39th Street into river and 4th Street into Sylvan Slough.

(3) Sewerage system includes Rock Island Arsenal wastes discharges to primary plant below Dam 15.

(4) New plant under construction.

(5) No organized collection system - Discharge indeterminate.

(6) Primary treatment - Assume 50% reduction in bacterial load.

(7) Storm water overflows and incidental waste discharges which cannot be estimated.

TABLE III

SOURCES OF ORGANIC WASTE DISCHARGE TO STREAM

	BOD Population Equivalent *		
Source	Individual Source	Total For Area	Per Cent of Total
Iowa			
Clinton	33,600	311,600	85.1
Pillsbury Mills - Soybean	58,000(1)		
Clinton Corn Processing Company	180,000		
E. I. du Pont de Nemours	40,000(1)		
Swift and Company	Undet.		
Clinton Rendering Company	Undet.		
Camanche	1,500	1,500	.4
LeClaire	1,550	1,550	.4
Bettendorf	N.A.		
Aluminum Co. of America	80	80	.1
Illinois			
Fulton	3,400	3,400	.9
Albany	640	640	.2
Port Byron	1,150	1,150	.3
East Moline	14,000(2)	14,000	3.8
Moline	32,000	32,000	8.8
		365,920	100.0

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(1) Based on State of Iowa Survey - 1954.

(2) Based on 17-29% (average 25%) removal for primary plant with average influent BOD strength of 150 ppm, and average flow of 2.5 MGD.

deal of information from the Iowa State Department of Health and from individual community and industrial facilities operators.

In the tables referred to we have given data both on the severed populations and the estimated bacterial population equivalents of the sewage, BPE that is, as discharged to the river. In certain cases, you will notice that the bacterial population equivalent, the BPE, is less than the corresponding severed population. The difference represents the estimated reduction in bacteria due to sewage treatment. As an example, the plant of the Aluminum Company of America at Bettendorf has a severed population of 870, but we have listed an equivalent value of only 90, because it was estimated that the treatment afforded at this plant reduced by 90 percent the bacteria in the waste discharge.

The sewage from the duPont plant, the Dairypak, Maquoketa and Interstate Power Plants in Clinton, Iowa, is passed through septic tanks before being discharged to the river, and we have estimated that the bacterial content is thereby reduced by 50 percent.

The untreated sewage from the City of Clinton and from the Clinton Corn Processing Company, Swift and Company, the Collis and Curtis Companies, Pillsbury Mills and the Clinton Wire Cloth Company is discharged to the Mississippi River, Beaver Slough or Mill Creek, a tributary of Beaver Slough.

The town of Camanche is constructing a sewage collection system with interceptor. Plans and specifications for the treatment plant have been approved by the State of Iowa, but at the time of the survey bids had not been let nor construction started.

The town of LeClaire, Iowa, had a sewerage system and a primary treatment plant under construction in October of last year.

Fulton and Albany, Illinois, are building sewage treatment plants. The Fulton plant is of the primary type, whereas Albany's will be treated by the extended-aeration process. East Moline employs a primary treatment, and since early last summer has extended the facilities of its sewerage system to the Moline State Hospital in the northern part of the city, about 2,500 additional persons. About 90 percent of the population of that city we estimated now have sewer service.

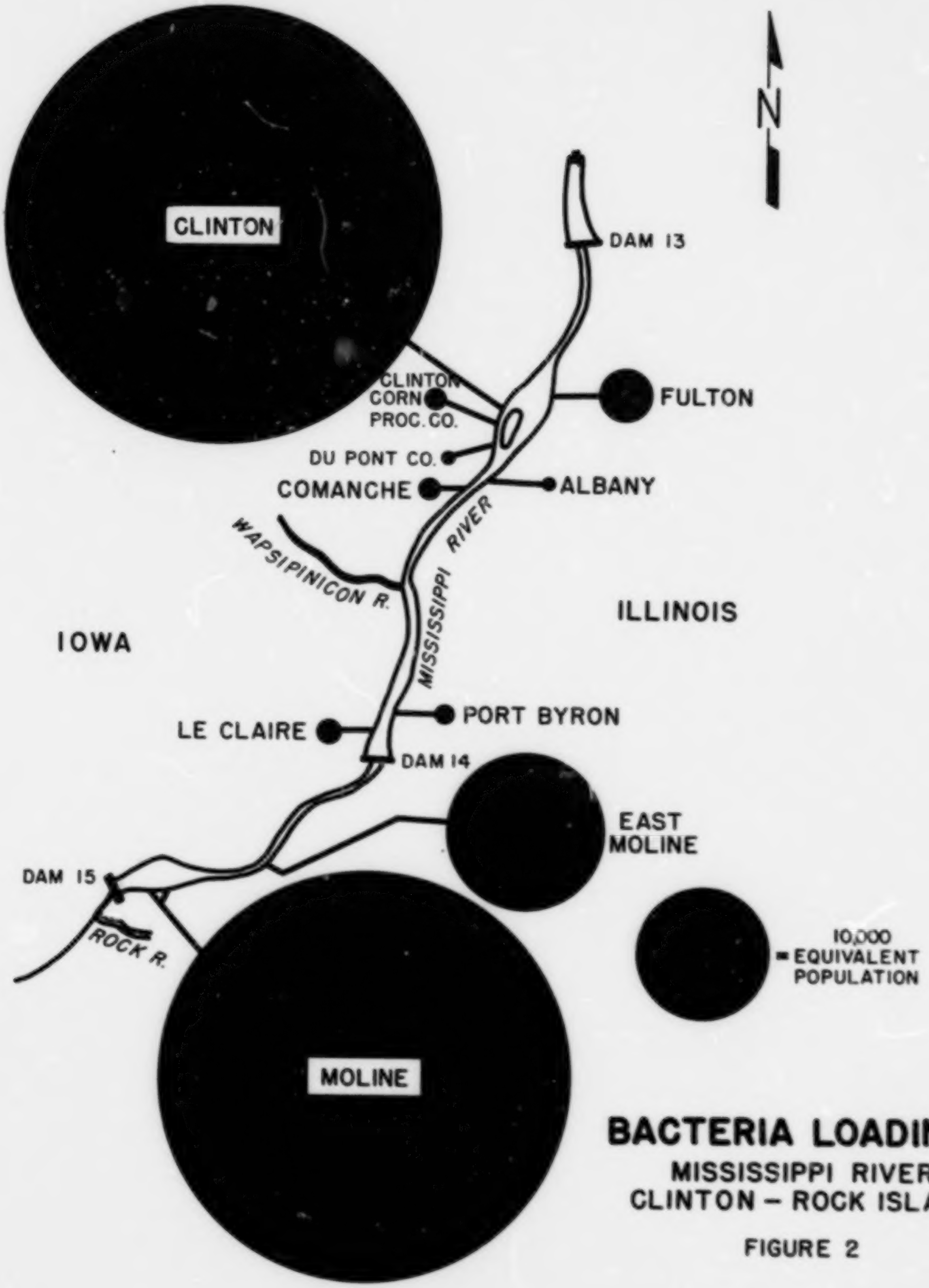
Moline has sewage treatment for only about 25 percent of its population, and the sewage of about three-quarters of the city are drained into the Sylvan Slough or waters immediately north in two large outfalls at 39th Street and at 4th Street. The remaining population of that city, comprising about 10,000 persons on the south slope, discharge through a primary treatment sewage plant into Rock River, which stream enters the Mississippi below Dam 15. We are informed that Moline is accumulating funds for construction of a north slope sewage treatment plant, which would drain into the Mississippi, by means of a special surcharge on water and sewage service billings.

Three of the communities mentioned in the foregoing, Fulton, Albany, and East Moline, have received and accepted offers for construction grants for sewage treatment plants under provisions of the Federal Water Pollution Control Act, and in addition Moline has built its south slope plant and Davenport has enlarged its existing facilities with the aid of such grants.

With the exception of East Moline and the aforementioned industries served by some form of treatment systems, all of the other communities and industries were discharging sewage without treatment, and the sewered population and bacterial population equivalents were thereby equal. At the time of the survey, none of the plants under construction was treating any tributary wastes.

We have an illustration, Figure 2, representing the sources of sewage discharged to this reach of the Mississippi River which I will now display. This is intended to show the proportionate loadings of sewage bacteria in the reach of the river which we studied. As you can see, the two largest sources are those of Clinton and Moline, followed by East Moline. The circles indicate the relative contributions of sewage bacteria from the various sources, with the diameter of the circle at each source in proportion to contributions from all other sources.

The survey area as a whole had a bacterial population equivalent of some 88,000 and a sewered population of 253,000. The difference, equivalent to 165,000, or about two-thirds of the total, represents removal either by sewage treatment or by diversion outside the area by the three cities of Bettendorf, Davenport, and Rock Island. Out of the total bacterial population equivalent of 88,300, municipal sewage discharges


N
CLINTON
DAM 13
CLINTON CORN PROC. CO.
FULTON
DU PONT CO.
COMANCHE
ALBANY
WAPSIPINICON R.
MISSISSIPPI RIVER
ILLINOIS
IOWA
LE CLAIRE
PORT BYRON
DAM 14
EAST MOLINE
DAM 15
ROCK R.
= 10,000 EQUIVALENT POPULATION
MOLINE

BACTERIA LOADINGS
MISSISSIPPI RIVER
CLINTON – ROCK ISLAND

FIGURE 2

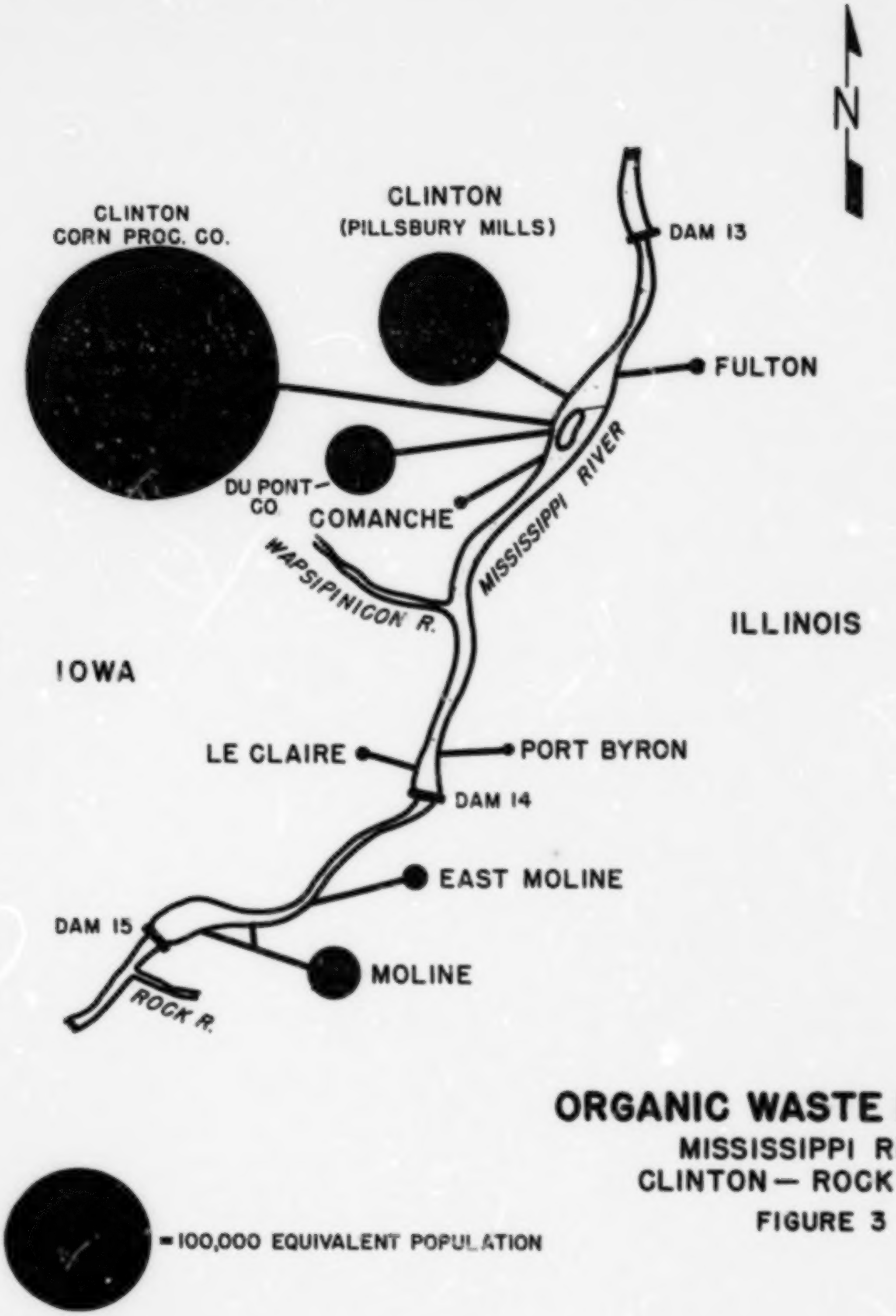
contributed 97.1 percent, and industrial sanitary waste discharges the very small remaining fraction of about 3 percent. Clinton's municipal sewage contributed 38 percent of the total bacterial loading, Moline about 36 percent, East Moline 13, and five remaining smaller communities among them less than 10 percent.

We have another chart showing the sources of sewage and industrial waste waters discharged to this reach of the river, with the relative loadings in proportion to diameters of the circles, as before. This shows the organic equivalent of the waste loadings. It is not necessarily a sanitary waste. It may also represent organic industrial wastes. The values are expressed again in terms of population equivalents, and the population equivalent of industrial organic waste has been computed by assuming an equivalent of six for each pound of 5-day biochemical oxygen demand in the daily discharge of industrial wastes.

Can you all see this? This circle (indicating) represents an equivalent population of 100,000. As you see, the major loading in this instance does come from the Clinton area. This circle represents the contribution of Clinton Corn Processing Company, this of the City of Clinton including Pillsbury Mills. It is not intended to imply that these organizations use a common waste discharge. This was merely combined for drafting convenience.

The total population equivalent of the area was some 366,000. That means, of course, that the organic wastes going into the river were equivalent to the sewage in their oxygen-consuming capacities from a population of 366,000 persons. 85 percent of this loading came from the Clinton area, 9 percent from Moline, and 4 percent from East Moline. The large contribution from Clinton includes three major discharges of industrial waste, from Pillsbury Mills, the Clinton Corn Processing Company, and duPont Company.

Clinton Corn Processing wastes were estimated to have a population equivalent of 180,000. In the 1954 study by the State of Iowa, Department of Public Health, the PE of this plant was much greater, estimated at half a million. Processing refinements and economies developed since 1954 have thus reduced wastes production by 64 percent, a very fine achievement. The PE per unit of raw material processed, which is the bushel of corn, is presently about 2.7. That means each bushel of corn processed produces wastes equivalent to those of about


N
CLINTON
CORN PROC. CO.
CLINTON
(PILLSBURY MILLS)
DAM 13
FULTON
DU PONT CO.
COMANCHE
MISSISSIPPI RIVER
WAPSIPINICON R.
ILLINOIS
IOWA
LE CLAIRE
PORT BYRON
DAM 14
EAST MOLINE
DAM 15
MOLINE
ROCK R.
=100,000 EQUIVALENT POPULATION

ORGANIC WASTE LOADINGS
MISSISSIPPI RIVER
CLINTON — ROCK ISLAND
FIGURE 3

three human beings. Further improvement can be anticipated in the future, possibly down to a PE of .7 or less per bushel. Any such reduction, however, would be partially vitiated by increases in plant output. One such increase is definitely in prospect with the completion of a new alcohol production unit now under construction and possibly completed at this date. The latter will require 3,000 to 6,000 bushels more of corn to be processed daily, thereby augmenting waste product by a PE of 8,000 to 16,000 pounds. The waste discharge of this plant also includes at times a black substance which discolors a considerable portion of Beaver Slough below the plant.

In the aerial photograph which you see pinned to the board on my left, I think if you will take a close look at it you will find that area of discoloration. I will indicate it now. This (indicating) is Beaver Slough, Beaver Island, and the aforesaid discoloration is very plainly shown in this photograph taken in the spring of 1958.

Our estimate of the population equivalent of wastes of the duPont plant of 40,000 we believe to be conservative. It was based on earlier measurements in the overflow channels of the waste water lagooning system, no longer in use. At present, the waste waters are discharged direct to Beaver Slough and may well be stronger upon reaching the river than they were before the lagoons were abandoned.

In regard to fish kills, there have been three reported in recent years due to discharge of toxic chemicals in the Clinton and Quad Cities areas. The Collis Company of Clinton was responsible for an accidental discharge of cyanide on September 6, 1961, as well as one in 1954. Then there was a similar discharge traced to the Quad Cities area in November of 1954. There was no definite identification of the offending institution or industry in the latter instance, although the plating operations at the Rock Island Arsenal were circumstantially suspected. At the present time, however, the Arsenal discharges all of its wastes to the Rock Island sewer system, and its plating operation has an alkaline-chlorine destruction unit for waste cyanides which reduces this very toxic material to an innocuous condition.

Mr. Chairman, I would like to show a few slides at this point to give the audience and myself a little break.

This first slide is a shot of the boat harbor or marina in Clinton and indicates a very small fraction of the

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recreational use of these two pools.

This is one of the waste discharge outlets in Beaver Slough, I believe of the City of Clinton.

And this is another waste discharge--I do not have the identification of this--in Beaver Slough.

This shows some of the discoloration of the water which we referred to. These photos, by the way, were taken during the reconnaissance of last September, September 1961. This is from Clinton Corn Processing Company.

This is, I believe, a municipal waste discharge of the City of Clinton.

And this represents a floating accumulation of Sphaerotilus organisms, which is a biological indicator of a polluted water. This was taken in September of 1961 in the lower reaches of Beaver Slough.

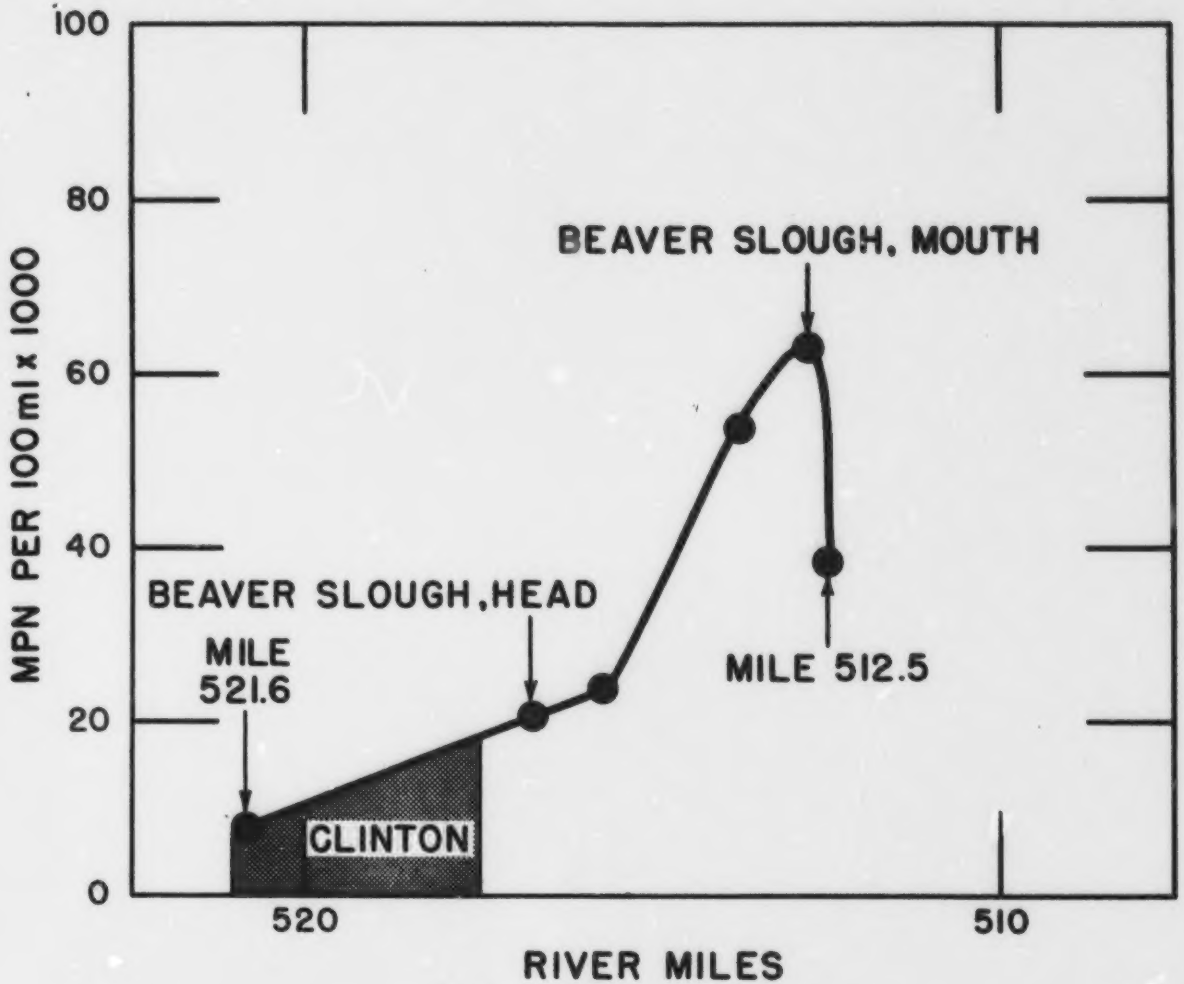
I think that is all the slides.

CHAIRMAN STEIN: At this point, may we have a ten-minute recess. You can get up and stretch and go out. We will reconvene promptly in ten minutes.

(RECESS)

CHAIRMAN STEIN: Mr. Coffey, will you resume, please?

MR. COFFEY: Thank you. I will discuss briefly the effects on water quality and uses. The localized effects of sanitary waste discharges in Beaver Slough and the reach of the Mississippi just below the slough are shown in this chart at my left. This represents our uppermost sampling station about halfway between the Fulton bridge and the dam, and from there we have followed down Beaver Slough. The bacterial content built up from a value at mile 521 from about 4,100 to some 63,000 at the peak. The last point on the curve was taken in the main stem of the Mississippi itself at mile 512, a short distance below the mouth of Beaver Slough on the western side of the channel, and that was about nearly 40,000. So you see there has been a variance or about fifteenfold build-up in the bacterial content of the slough waters. These are based on seven-day rather than nine-day mean values. Our survey lasted nine days, but during the last two days we had rather heavy rains



MPN PROFILE

MISSISSIPPI RIVER, WEST SIDE AT CLINTON, IOWA
(VIA BEAVER SLOUGH) - OCT. 23-29, 1961

FIGURE 4

which caused the bacterial counts to jump up to very high values.

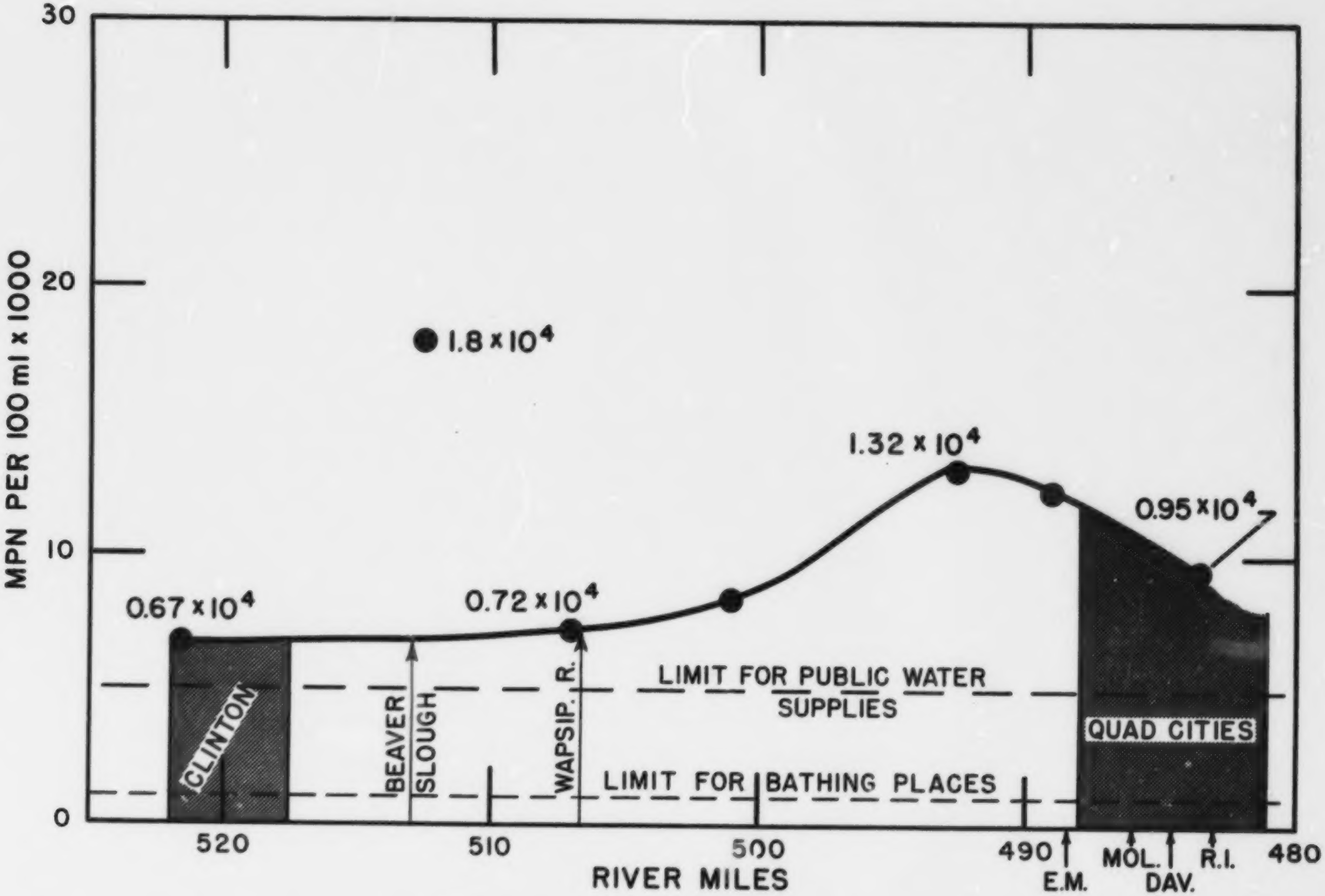
No serious effect of the waste discharges upon dissolved oxygen content within this reach was noted nor suspected, because their time of flow in the slough was too short to permit significant oxidation, especially under the conditions of stream flow and low water temperatures which prevailed during this late October season. The water was nine to twelve degrees centigrade, about forty to fifty degrees Fahrenheit, very cold.

A brief biological survey was conducted by biologists from the Taft Sanitary Engineering Center October 21st to 23rd and revealed a "degraded collecting area"--these are their words--"on the Iowa shore downstream in a slough," that is Beaver Slough, "between Clinton and a corn products plant: here the filamentous bacterium, Sphaerotilus, dominated and bottom deposits had a foul odor."

In the next figure, the next chart, we show the more widespread effects of bacterial loading of the river. At the most northerly sampling range, mile 521.6 north of Clinton, bacterial density averaged 6,700 MPN per 100 milliliters during our entire survey. It rose gradually, as you see, to a peak of 13,250 above the Quad Cities zone, and then declined to 9,500 in the pool immediately above Dam 15 at mile 483.5. Quad Cities are shown on the right-hand side of the chart. This was the average for the range, or cross-section of the river, during dry-weather flow, excluding the last two days of this survey, when the river discharge was doubled rapidly by rains. Individual locations sampled within the pool displayed higher values: near the East Moline waterworks intake, 41,000; at the Moline waterworks intake, 38,000; at the Davenport intake, 20,000; and Rock Island, 11,800.

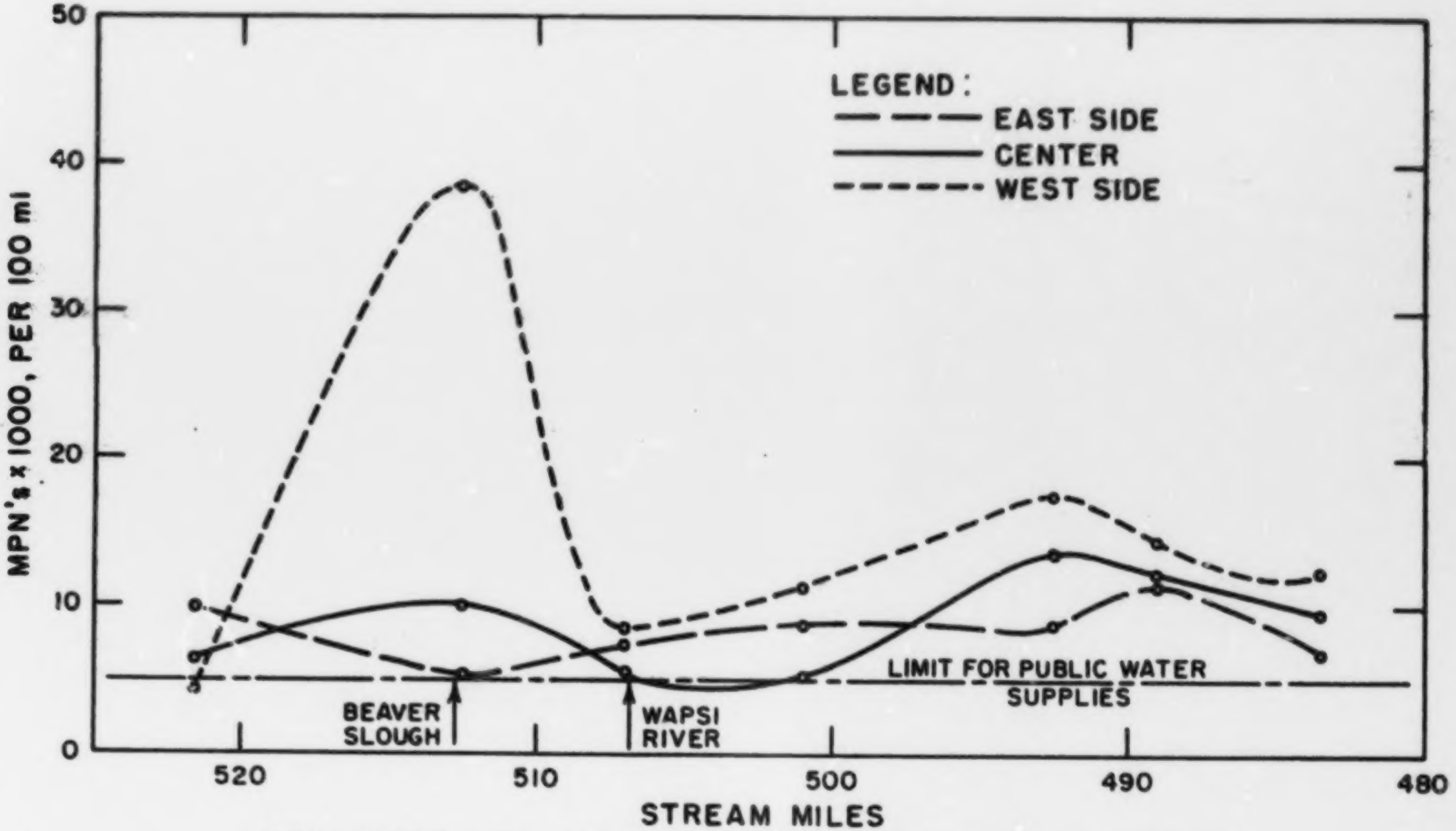
The findings of our survey in respect to bacterial population, we feel, did not reveal the worst possible condition. The latter would occur during simultaneous conditions of minimum river flow and maximum river water temperature. The historical monthly minimum flow in this reach of the Mississippi is 11,120 second-feet. The long-term monthly average is about 47,500 second-feet. During our survey, the river flows averaged about 27,000 second-feet, and water temperatures around ten degrees centigrade.

A monthly mean flow of 19,000 second-feet or less has a probability of occurring one year out of five during the warm



MPN PROFILE-SEVEN-DAY PERIOD, OCT. 23-29, 1961

MISSISSIPPI RIVER
CLINTON — ROCK ISLAND
FIGURE 5



MPN PROFILES - SEVEN DAY PERIOD, OCT. 23-29, 1961

FIGURE 6

weather months August and September. We have prepared an analysis of bacterial densities which might occur under such circumstances, and that is shown in our last chart. With river water temperatures above fifteen degrees centigrade, calculated bacterial densities would be about 38,800 MPN per 100 milliliters at mile 506.5 in the Princeton-Cordova area, and 13,800 at mile 489, just above the Quad Cities. A further rise in bacterial pollution would occur in the Quad Cities zone owing to the discharge of untreated and partially-treated municipal sewage from Moline and East Moline. The effect of sewage discharges of the Dubuque area has been considered in the calculation on which this chart is based.

This calculation of summer bacterial densities tends to be confirmed locally by the actual operating records for the Moline and East Moline water treatment plants in 1961. In the report, we have shown excerpts from these records. For example, last year in East Moline during the month of July the mean monthly coliform count was 32,000, in September 47,000. For the City of Moline they ranged from about 40,000 to 59,000, a rather severe bacterial pollution.

At this point, it may be of interest to compare the laboratory records made respectively by our own mobile laboratory and the municipal laboratories of East Moline, Moline and Davenport, and we have shown those on page 31. Those of you who have a copy of the report, I think you will note there is quite a close correspondence between the results obtained by the several independent laboratories.

The effects of total organic wastes, sewage plus industrial waste waters, from Clinton and vicinity are perceptible, but were small at this season and stream flow. They correspond to a reduction of about 0.6 parts per million of dissolved oxygen, or about 12 percent of the available capacity of the river to assimilate organic pollutants, before being degraded to the point of endangering normal aquatic life, which is assumed as about five parts per million. This effect would be intensified during warm weather, owing to the lesser solubility of oxygen in warmer waters. At ten degrees centigrade, fresh water saturated with oxygen dissolves about eleven parts per million of oxygen, and at thirty degrees only about 7.6 parts per million.

The significance of the findings of this study in relation to the established beneficial uses of the Mississippi River can be expressed as follows:

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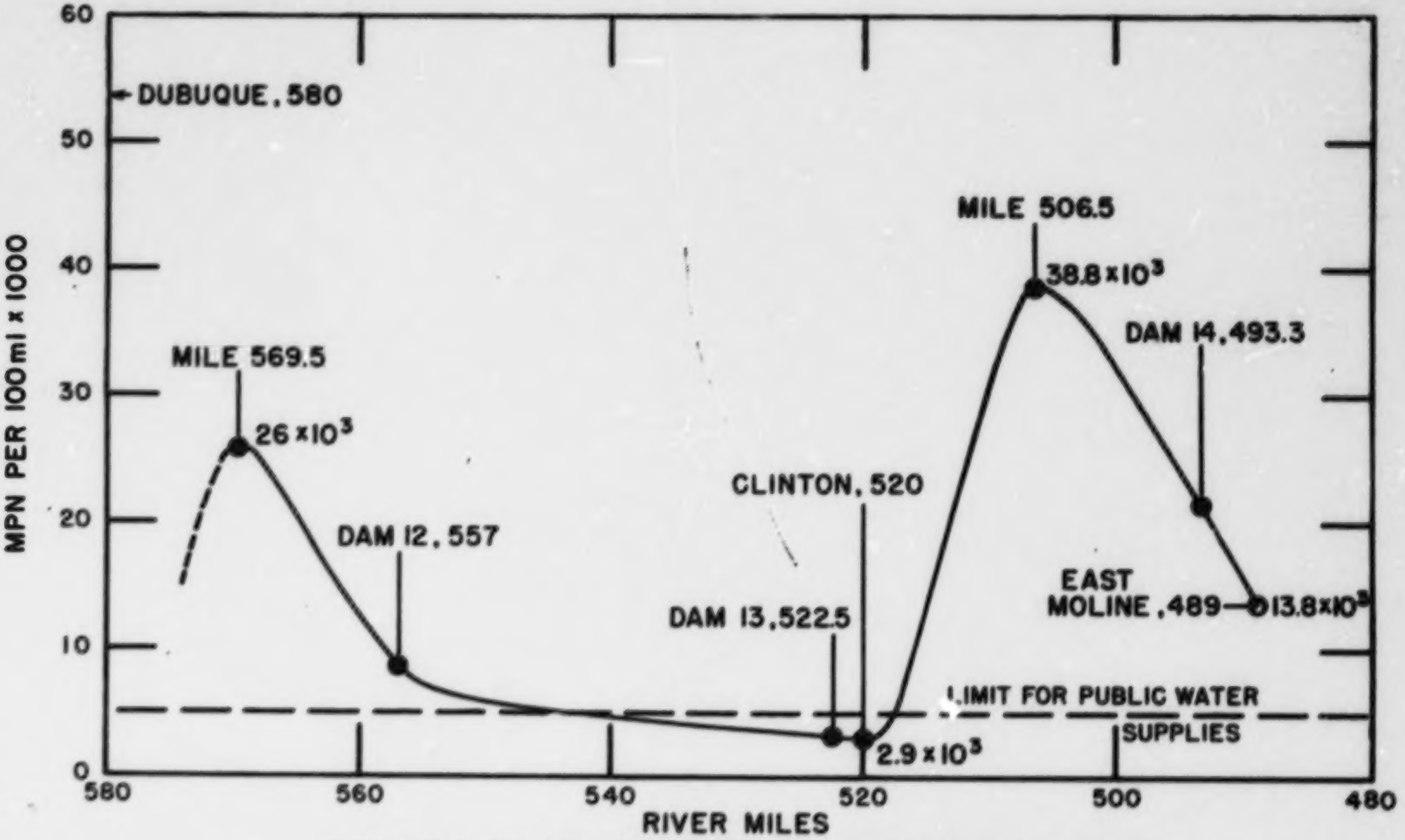
Five-day Mean Coliform Counts, MPN per 100 ml.
Raw Water Sources
October 23-27, 1961

	PHS	Municipal
East Moline	30,300	29,600
Moline	37,700	60,800
Davenport	16,800	18,600



CALCULATED BACTERIAL DENSITIES FOR SUMMER LOW FLOW CONDITIONS

FIGURE 7

Domestic water supply. Quantitative limits for bacterial pollution in natural waters serving as sources of domestic water supply have not been established for the Mississippi River by the States of Iowa and Illinois. Regulations of the State of Illinois, Department of Public Health, merely stipulate the type and degree of water treatment which shall be required for waters exceeding a given condition of coliform pollution.

Views of the Public Health Service with respect to bacterial quality of sources of domestic water supply are given in our "Manual of Recommended Water Sanitation Practice" published in 1946. There it was stated in effect that waters which fail to meet the following requirements are considered unsuitable for use as a source of water supply, regardless of the type of treatment employed, unless they are first brought into conformance by "prolonged preliminary storage, or some other measure of equal permanence and reliability:" and we have listed those requirements.

The first is that the coliform bacteria shall not average over 5,000 per 100 milliliters in any one month, that is the monthly average;

Not over 20 percent of all the samples collected during that month shall exceed 5,000;

Not over 5 percent of the samples collected in any one month shall exceed 20,000.

These limits were exceeded for many months during the year 1961 at the waterworks intakes of the Cities of Moline and East Moline, and in an appendix to the report we have shown the actual values.

The monthly coliform averages in September, last September, for the City of East Moline was nine times the recommended limit of 5,000, whereas Moline's monthly average was twelve times the limit. And we have included a table showing the actual values and the mean values and the maximum for the four Quad Cities during our survey of last October, on page 34.

In addition to this, visible evidence of pollution in the form of oil films and rubber prophylactics has been seen daily at the Davenport waterworks and occasionally at the Rock Island Arsenal intake. Oil and grease occur occasionally at the Moline plant, and the Rock Island waterworks reported that the

Coliform Organisms, MPN per 100 ml.

City	Mean	Maximum
East Moline	41,200	79,000
Moline	38,100	130,000
Davenport	28,000	79,000
Rock Island	11,400	24,000

surface of the settling basins has been plagued with a malodorous scum of unidentifiable origin in recent months.

Taste and odor problems in the raw water requiring increased chemical dosages, particularly of carbon, have occurred in each of the waterworks, and in addition there have been unexplained changes in raw water quality at Moline which have required rapid fluctuation in alum dosage.

Under the circumstances described above, it is tribute to the competency of the operating personnel of these water treatment plants that they have been consistently able to produce treated waters of safe bacterial quality. It appears hazardous, however, to continue indefinitely under conditions of bacterial overloading, lest failures occur.

In regard to industrial water supply, we have indicated that industrial water uses greatly exceed domestic water use in volume of water pumped. The quality of water for rough industrial uses, cooling condensers and dust collection processes, does not appear to have suffered excessively so far, although one large firm, The John Deere Company, of East Moline, reported an increase of slime growths during the past few years which, if continued, would require treatment for their reduction.

The Aluminum Company of America and the Iowa-Illinois Gas and Electric thermal power plant in Bettendorf both practiced intermittent chlorination to reduce organic slimes in their waterworks intake.

Recreation. The extensive uses of this reach of the Mississippi River for recreation and their economic and social importance have been described in a preceeding section. Under present conditions, the Mississippi River in this reach is degraded far beyond accepted limits of bacterial water quality for bathing, swimming, and other sports involving direct water contact.

The Illinois State Department of Health adopted rules and regulations on January 11, 1961, governing organized camp use of natural bathing areas. Two primary standards set by this agency are the total coliforms and enterococci counts. For total coliforms, a natural bathing area is judged unsatisfactory when the most probable number is greater than 500. Although this value is a controlling factor only for use by organization camps, its extension as a criterion for use by others appears logical.

The quality objectives of the State of Iowa are expressed in their "Tentative Guide for Water Pollution Control Activities", dated February 27, 1952, of the Missouri Basin Health Council, of which Iowa is a member. That states: "For bathing and swimming waters, monthly arithmetical average 'most probable number' of coliform organisms should not exceed 1,000 per 100 milliliters during any month of the recreation season; nor exceed this number in more than 20 percent of the samples examined during any such month; nor exceed 2,400 per 100 milliliters on any day." The values cited apply particularly to the Missouri River Basin, but can perhaps be extended logically to other waters of the State, including the Mississippi.

During the present survey, the coliform MPN's exceeded 1,000 per 100 milliliters in all of the 211 samples taken at the seven main stem sampling stations on the Mississippi River. Their values ranged from a low of 2,300 to 130,000. The bacterial densities during the summer period under similar flow conditions and higher temperatures would be expected to be higher, as we have indicated in Figure 7.

Even discounting the effects of temperature and low flow, the average coliform concentration was around 13,000 per 100 milliliters above the Quad Cities. This means, in common terms, that every drop of water splashed from the prow of a boat into an occupant's face would contain about seven "sewage bacteria".

The increasing popularity of water skiing is rapidly multiplying the numbers of persons who, when they fall into the water and submerge, receive even greater exposure to the contaminated water than do the boaters.

On the basis of either the measured densities or expected summer coliform densities, safety limits recognized by the two states for these or for other waters are greatly exceeded. Strict adherence to these criteria of water quality would preclude the use of the river for most water sports for the several hundred thousand people having access to this river stretch.

The presence of visible sewage solids, oil and toxic wastes which are discharged in untreated sewage and industrial waste waters is likewise incompatible with any recreational use of natural waters or with their aesthetic enjoyment. The YWCA camp swimming area below Cordova has in the past been littered by refuse, including garbage from the Princeton, Iowa, area.

This condition has now been corrected, but is another indication of the interstate transfer of pollutional material.

With regard to fish and wildlife, dissolved oxygen levels inimical to fish and other higher aquatic life were not found during this survey. They do not appear likely to occur generally under present conditions. The biological survey did reveal localized degradation of aquatic life in Beaver Slough.

Continual complaints of the fouling of nets and lines with slime have been made by commercial fishermen, particularly in the Princeton-Cordova area. Although no detrimental effect to the fish has been apparent, this fouling of nets undoubtedly reduces netting efficiency and may damage them. Fish kills, as we have stated, due to the accidental discharge of toxic industrial wastes have occurred three times, and emphasize the need for vigilance to prevent such mishaps.

I have now come to the summary, which I will conclude as rapidly as possible.

The results of the survey show that bacterial pollution from the Clinton area affects important water uses downstream. Sources of domestic water supplies for the Cities of East Moline, Moline, Rock Island, Davenport, and others, including Rock Island Arsenal, are all affected by the high bacterial densities contributed by the Clinton area. These are in excess of the limits which the Public Health Service recognizes as safe. They are independent of the sizable bacterial loads applied by sewage plant discharges from East Moline, the raw sewage discharge from Moline, and from wastes which enter the river above Clinton. There has been visible evidence of sewage pollution at Davenport, Moline, Rock Island, and the Arsenal in the form of oil films, foam and floating rubber prophylactics.

The extensive use of this stretch of the river for recreation by nearly one-half million people in the riparian counties bordering it would be debarred on the basis of criteria for natural bathing areas as recognized by the States of Iowa and Illinois. These criteria are exceeded many times over. Notwithstanding its polluted condition, the river is used, and the users are exposed to at least a concentration of seven "sewage bacteria" per drop of water. This concentration is no doubt much higher under summer low flow conditions and emphasizes the health hazard not only for the multitude of young people using the YMCA, YWCA, and other organizational camps, but also for the many thousands of other boaters, bathers, water skiers, fishermen, hunters and picknickers.

Other effects of pollution include the fouling of commercial fishing nets, as already referred to. Degraded-water forms of aquatic life were found in Beaver Slough, and occasional fish kills have been caused by the release of toxic industrial wastes.

It is concluded that the bacterial quality of interstate waters of the Mississippi River between Clinton and Rock Island is undesirable for waters used as a source of public supply and for recreation. The principal sources of pollution are at Clinton, East Moline and Moline, and from points above Dam 13. The undesirable effects are believed to be augmented by large discharges of organic industrial wastes at Clinton. It is evident that pollution of the Mississippi River by certain riparian communities and industries in the reach between Dams 13 and 15 constitutes pollution of interstate waters subject to abatement under the Federal Water Pollution Control Act, as such pollution endangers the health or welfare of persons in a state other than that in which the discharge contributing to such pollution originates.

That concludes the report. Thank you very much.

CHAIRMAN STEIN: Thank you, Mr. Coffey. Would you mind staying up here in case there are any questions or comments?

Mr. Houser?

MR. HOUSER: To ask one question to clarify the listing of one of the communities on the Iowa side listed in Table IIa on page 16.

MR. COFFEY: Yes, sir.

MR. HOUSER: The Town of LeClaire is listed with a sewered population of 1,500.

MR. COFFEY: Yes.

MR. HOUSER: May I continue, please? The report, however, does state that the Town of LeClaire, on page 19, had a sewerage system and primary treatment plant under construction in October 1961. Now, I can't understand how they would be contributing 1,500 population where they don't have sewers.

MR. COFFEY: I think we must have anticipated the completion of their plant by a little, Mr. Houser.

MR. POSTON: Would you repeat that?

MR. COFFEY: I say I think the table must have anticipated the completion of this sewage collection system and plant.

MR. HOUSER: I just merely wanted to bring that out.

CHAIRMAN STEIN: Do you have any questions, Mr. Poston?

Any further questions, Mr. Houser, or comments?

MR. HOUSER: Not at this time.

CHAIRMAN STEIN: Mr. Poston?

MR. POSTON: I don't have any questions at this time.

CHAIRMAN STEIN: Mr. Klassen.

MR. KLASSEN: I will comment later.

CHAIRMAN STEIN: I would like to ask you one thing, Mr. Coffey. I was interested in the last portion of your report where you talked about fish and wildlife and just talked about the dissolved oxygen levels not being inimical to fish and other aquatic life. Has this report considered the effect of toxic materials on fish or perhaps effects of materials on tainting the flesh of fish and other aquatic life?

MR. COFFEY: Yes, Mr. Chairman, the effect of toxic materials has been considered, and we have recorded fish kills due to accidental release of toxic wastes on three occasions in 1954 and 1961.

As for the effect on the tainting of fish flavor by industrial wastes, we have not found any evidence of that in these waters.

CHAIRMAN STEIN: This might be something for the people who may be called later to consider, whether there are indications of that in these waters.

Any further comments or questions?

MR. KLASSEN: Just one other to follow up the question that you asked, Mr. Stein. You said there is no evidence of fish tainting. Did you make any experiments to determine whether this is true?

MR. COFFEY: No, Mr. Klassen, we did not. Our information was obtained by interviews with commercial fishermen.

CHAIRMAN STEIN: Thank you, Mr. Coffey.

Mr. Poston, will you call your next person?

MR. POSTON: The U. S. Corps of Engineers, Colonel R. L. Hennessy, has asked to make a statement.

Would you step up and give your name and organization for the record.

COLONEL HENNESSY: I am Colonel Richard Hennessy. I represent the North Central Division of the Corps of Engineers at today's conference. I am attending in response to an invitation from the Department of Health, Education and Welfare. This response is made primarily because there is some public misconception on just exactly what the interest and responsibility of the Corps of Engineers is in pollution, and it was felt that some public statement might prove useful in this regard. That statement is in the form of a letter to Mr. Stein, which I will leave with the reporter, and with your indulgence I will read that because some of the language is rather specific.

The Corps of Engineers has two main interests in water pollution. First we are interested in cooperating with all agencies concerned with prevention of water pollution. Second, fundamental to our mission is the elimination of that pollution which constitutes a hazard to navigation.

The primary basis for our cooperation is found in Public Law 660-84th Congress as amended by Public Law 87-88. Under this authority the study of our projects that will influence stream flow will include:

a. Consideration of storage for regulation of stream flow for the purpose of water quality control, except that any such storage and water releases shall not be provided as a substitute for adequate treatment or other methods of controlling waste at the source.

b. The need for and the value of storage provided for water quality control shall be determined with the advice of the Secretary of Health, Education, and Welfare.

c. The value of such storage shall be taken into account in determining the economic value of the entire project of which it is a part.

d. Costs of water quality control features incorporated in any Federal reservoir or other impoundment shall be determined and the beneficiaries identified.

In a specific problem, one of the first steps required is the selection or establishment of stream quality objectives. In accomplishing this, primary reliance is placed on the standards set by the Public Health Service. In establishing these quality objectives, cost is an important factor. Unless care and judgment are exercised in this regard, the cost may be increased without any compensating gain in effectiveness of water use.

Hand in hand with the establishment of quality objectives goes the matter of evaluating these aspects for any given stream. The value of quality lies in its contribution to safety and effectiveness in the use and enjoyment of water. Economic, aesthetic and social considerations are all involved. However, definite measurements of value are difficult. The general approach is to identify and, insofar as possible, quantify the adverse results associated with failure to attain a specific objective. Such elements as preclusion of additional industrial development, corrosion of fixed and floating plant, loss or downgrading of recreational opportunities, increased water treatment costs, impairment of health and welfare, damage to fish and wildlife and degradation of the aesthetics of enjoyment of unpolluted streams are involved. It goes without saying that situations are encountered where a substantial part of the benefits are intangible in nature but nonetheless real and worthy of attainment.

The foregoing has dealt largely with project planning. These plans are coordinated with the Public Health Service and concerned local, state, and Federal agencies. It should be added that in practice it is the position of the Corps of Engineers that the establishment of standards for required water and sewage treatment is not our business and we endeavor to avoid controversy in this regard.

In the first paragraph two interests were mentioned--cooperation with other agencies and elimination of hazards to navigation. The Corps of Engineers' responsibility in this second area is derived from the Federal laws enacted for the protection and preservation of navigable waters. These laws are generally limited and directed to such control as may be necessary to protect the public right of navigation. With regard to pollution, the River and Harbor Act of 1899 (Section 13, 30 STAT. 1152, Section 407 of Title 13, U. S. Code) provides that it shall not be lawful to deposit refuse matter into navigable streams other than that flowing from streets and sewers in a liquid state, or to place material of any kind on the bank of a river (including non-navigable tributaries) that might be washed into a navigable stream and constitute a hazard to navigation.

The Corps of Engineers administers the River and Harbor Act of 1899 in the interest of navigation rather than of conservation, public health, or sanitation. However, it should be noted that oil is considered a hazard to navigation, and it is our responsibility to investigate and eliminate such pollution. In actual practice we attempt to realize this end by informal contact with offenders, seek their cooperation and avoid legal action if not necessary to gain the objective of elimination of pollution.

There is one other matter that should be included in this discussion. That matter is our own operations. At times flood control or navigation projects will lead to temporary muddying of a river. We do what we can to alleviate this situation through ponding techniques in levee construction and judicious selection of deposit areas for channel dredging, but a certain amount is inherent in the act of agitating a mixture of water and soil. In the main, however, we feel this is a temporary minor conflict in the overall best plan for the utilization and control of a water resource. Moreover it is largely offset in the Mississippi River by incidental benefits that accrue, such as the increase in oxygen in the water introduced in passing the dams, beaches for recreation created from channel spoil, the protection from floods of water and sewage treatment facilities, and the inherent recreational potential of the pools created in the interest of navigation.

In closing, I would like to express the appreciation of the Corps of Engineers for the invitation from the Department of Health, Education and Welfare to attend this meeting and present this statement on our interests and responsibilities and how they include the matter of pollution. We feel that the effort and cooperation of many interests and agencies are required before it is possible to relate the control and use of surface water--for power, irrigation and reclamation, recreation, health, home, and industry--to meet the future needs and desires of the people and economy of the Upper Mississippi in such a manner that these related uses become, in toto, a contributing element to economic growth rather than a limiting or retarding factor. In this portion of the river basin, certainly pollution is a matter of vital concern in realizing this objective.

Thank you.

CHAIRMAN STEIN: Thank you. Are there any comments or questions?

I would like to make one comment. I would just like to re-emphasize what the Colonel said, one important point. We have a new provision in our Act, and that states that water storage and water release from Federal impoundments shall not be provided as a substitute for adequate treatment or other methods of controlling waste at the source. I think that is something we all must consider. We are not going to get any additional water for dilution without providing adequate treatment through other controls at the source.

Thank you.

Mr. Poston.

MR. POSTON: Lieutenant Colonel Messall with the Rock Island Arsenal.

COLONEL MESSALL: I am Lieutenant Colonel Charles Messall. My official capacity is that of Post Engineer at Rock Island Arsenal. I represent here today the commanding officer of that organization.

We have no real official statement. However, our interest is precisely that of all users of waters in the downstream reaches. We have over the last several years reasonably well cleaned up our own house, and, believe me, we had some work to do there. As Mr. Coffey pointed out earlier, we have provided a cyanide treatment for our plating processes; we have provided complete treatment of the domestic sewage to the City of Rock Island, who provided the treatment for us; we have fairly well cleaned up our own house.

We will continue to cooperate in any fashion we can. We are certainly interested in the statements made by Mr. Coffey on the amount of coliform pollution at our intake. We know what it is. It is well over the limit that should be present.

Thank you.

CHAIRMAN STEIN: Thank you, sir.

Are there any comments or questions?

MR. HOUSER: May I ask one question, please, Colonel?

COLONEL MESSALL: Yes, sir.

MR. HOUSER: It is mentioned in the report, I believe, in regard to reporting fish kill, similar discharge was traced to the Quad Cities area in 1954, U. S. Arsenal at Rock Island was suspected. Now, the waste treatment facility that you just mentioned, is that on the line that this--

COLONEL MESSALL: After that time, sir, and on the same item. After the time of the suspected fish kill and on the same item.

MR. HOUSER: Thank you.

CHAIRMAN STEIN: Any other comments or questions?

Thank you, Colonel.

Again this emphasizes another provision of the law, in having Federal installations show the way in cleaning up their own house. As you know, in the Federal establishment we maintain a large number of installations. I think the Colonel for the Rock Island Arsenal has indicated the kind of work that is being done at these Federal installations. But at the same time, I think the Federal installation has the right to expect the kind of water at its water intake that it provides and the kind of treatment it gives to its neighbors downstream.

Mr. Poston.

MR. POSTON: I would like to ask one question concerning the treatment at the Rock Island Arsenal, if I might, from Mr. Klassen.

Has this treatment been approved by Illinois?

MR. KLASSEN: Domestic waste goes to Rock Island Municipal Plant, where it receives primary treatment. So far as the complete information on the industrial processes, we don't have that from the Arsenal.

And I am assuming when the Colonel mentions that the house is reasonably well in order, that implies that all of the wastes are being collected and adequately treated. Is that correct, Colonel?

COLONEL MESSALL: That is correct.

MR. POSTON: I would like to ask next Mr. Warren Nord of the Bureau of Sport Fisheries and Wildlife to make a statement.

CHAIRMAN STEIN: While Mr. Nord is coming up, I might point out that it is the general policy in Federal installations to have their wastes treated by a municipality if possible. This is the best kind of situation, because then the Federal installation is part of the community and the municipality is responsible for treating those wastes. I think this is the usual practice and what the Federal installations try to do throughout the country.

Mr. Nord.

MR. NORD: Mr. Chairman, ladies and gentlemen. My name is Warren H. Nord. I am Supervisor of the Branch of River Basin Studies for the Bureau of Sport Fisheries and Wildlife, Minneapolis, Minnesota.

I would like to introduce another member of our Bureau who is with me here today, my own brother Bob, who is Survey Director of the Upper Mississippi River Conservation Committee and is, so to speak, our man on the river. Bob, would you stand up, please.

President Kennedy recently asked the Congress to think of the "numberless generations" of the future and enact a far-reaching conservation program. Mr. Kennedy noted that there were 341,000,000 visitors to Federal land and water areas in

1960, and the figure is expected to double by 1970 and to increase fivefold by the end of the century.

A message from the President in a water pollution conference at DePaul University, Chicago, Illinois, on May 15 and 16, 1961, stated:

"The conservation and utilization of our water supply is a subject which should command the interest and attention of all. The growth we have known here in the United States is dependent in a large measure to the wealth of natural resources available to us. Continued growth in the future will depend heavily upon these same resources. Water pollution must be recognized as a serious and growing menace to the well-being of this nation."

The Mighty Mississippi has been rolling down this valley for as long as we can remember. It is said that familiarity breeds contempt, and to a certain degree this is true even in our relationships with our water supplies. We take them for granted, and whereas we would not allow for one minute having someone dump a batch of raw untreated sewage or acid wastes in our drinking water, we nevertheless condone similar action when we allow the release of such material into public waters from which we obtain our water supplies and on which we rely for much of our recreational activity and relaxation.

The Mississippi River at its source in Itasca County, Minnesota, begins its journey to the Gulf as relatively pure water. Mile after mile it flows past industrial and housing developments, through agricultural areas, all the while picking up additional flow from tributary streams whose journey has subjected them to similar adulterations.

Much of the material that is injected into the water is modified through chemical and bacterial action to enrich the stream so that it can support aquatic vegetation and aquatic organisms, forming food chains for the support of additional higher life forms. Some of the material, however, is toxic to these organisms. Some form stable compounds which remain unchanged by bacterial or chemical action over long periods of time, during which they may seriously contaminate or degrade the quality of water for the various uses, including human supply and water supply for wildlife resources. Aquatic habitat that is so polluted as to preclude the growth of minute plants and animals (food organisms), and which inhibits the beds of aquatic plants, offers little of value for fish and wildlife.

And if the supply of dissolved oxygen is depleted, the habitat no longer supports fish life.

Perhaps some of the people living along the Mississippi River wonder how this affects them personally. The River provides an aesthetic view, fishing and hunting opportunities, and boating, swimming, and other recreation.

Our Bureau is interested in assuring that this River continue to provide these opportunities, not only for the Clinton area, but for people using and enjoying the river throughout its entire length.

Our Bureau's authority in pollution matters is contained in Section 5 of the amended Coordination Act of August 12, 1958, (48 Stat. 401, 16 U.S.C. 661 et seq.).

Water pollution has been defined as the adding to water of any substance or the changing of water's physical or chemical characteristics in any way which interferes with its use for legitimate public purposes. Thus, the introduction of foreign elements as well as major manipulations of water temperatures are included within the meaning of the term "water pollution".

The reach of the Mississippi River under consideration supports natural food plants of value to waterfowl, muskrats, beaver, and numerous other creatures inhabiting the bottomland marsh and timber habitat. The major submerged aquatic plants are the broadleaf pondweeds, sago pondweed, curly pondweed, coontail, water milfoil, wild celery, and water buttercup, all important food to waterfowl.

The moist-soil and marsh plants of value to wildlife are wild millet, smartweeds, rice cutgrass, arrowhead, bulrushes, cattail, and lotus.

Associated with these aquatic and semi-aquatic plant beds are an abundance of snails and other invertebrate animal life essential in the diet of migratory waterfowl using the Mississippi Flyway.

As early as 1924, Congress recognized that the Upper Mississippi held great potential for fish and wildlife and recreation. In order to benefit from this potential, legislation was enacted to establish the Upper Mississippi River Wildlife and Fish Refuge. This refuge extends for 284 miles along the Upper Mississippi River from above the Chippewa River near Wabasha, Minnesota, almost to Rock Island, Illinois. The 195,000 acres included within its boundaries are in four states: Wisconsin, 87,987 acres; Iowa, 50,707; Minnesota, 32,985; and Illinois, 23,261. Lands purchased for this project by the Corps of Engineers, U. S. Army, have been turned over to the Bureau for wildlife management, along with lands purchased under the Refuge Act.

The Upper Mississippi Refuge accommodates over three million visitors annually, more than any other refuge in the United States. Many private and public access points are provided.

Extending downriver from the Upper Mississippi Refuge, the Mark Twain National Wildlife Refuge is distributed along 250 miles of the river flood plain. The Mark Twain Refuge is part of over 70,000 acres of land in the Mississippi River Valley between St. Louis and Rock Island which was released by the U. S. Army, Corps of Engineers, to the Bureau of Sport Fisheries and Wildlife for management purposes. Of this total, the Bureau in turn released 28,141 acres to Illinois, 6,499 acres to Iowa, and 12,368 acres to Missouri, for these states to manage.

Most of this land consists of managed public hunting grounds. The remaining 23,019 acres held by the Bureau comprise the Mark Twain Refuge, and they are devoted either to intensive management in a sanctuary situation or to public hunting.

The Upper Mississippi and the Mark Twain Refuges are located in the heart of the Mississippi Flyway. Thus, a large share of the migratory birds on the North American continent pass through them. It is estimated that about 250 species of birds use these refuges, and they are favorite areas for picnicking, boating, hiking, bird watching, and photography in addition to fishing and hunting.

Pools 14 and 15 are two important links in the chain of pools on the Mississippi River accommodating migratory waterfowl, especially mallards, scaup, canvasbacks, redheads, and ring-neck ducks.

Upper Mississippi Wildlife and Fish Refuge biologists working with biologists of the States of Iowa and Illinois make periodic flights over these and other pools censusing waterfowl. Minimum and maximum peak populations in the Savanna-Clinton

District for the spring, summer, and fall seasons since 1954 are as follows:

Spring, 13,200 (1960) to 286,000 (1956); Summer, 1,400 (1955) to 5,100 (1960); Fall, 36,000 (1960) to 171,000 (1956).

During those census flights, biologists have noted, investigated, and corrected several instances of oil pollution in this general area.

Sport fishing is an important recreational activity in pools 14 and 15, especially in the tailwater reaches of Locks and Dams 13 and 14.

The pools of the Upper River areas are under constant surveillance of the Upper Mississippi River Conservation Committee. This group has been active for the past 18 years in attempting to protect the fish and wildlife resources of the River. They are constantly working toward the maintenance and improvement of conditions affecting fish and wildlife throughout this reach.

The Upper Mississippi River Conservation Committee plans to conduct a cooperative survey of sport fishing on the Upper Mississippi River starting April 1st of this year. The Committee is composed of representatives of the Conservation Agencies of Minnesota, Wisconsin, Iowa, Illinois, and Missouri, the Army Corps of Engineers, the Public Health Service, and our Bureau.

The last general survey of this type was made five years ago. A total of 28,610 fishermen were interviewed in a section of the river extending from Hastings, Minnesota, to St. Louis, Missouri. This relatively small sample of the total fishermen who fished the Mississippi River during that period represented nearly 100,000 hours of fishing.

There is little doubt that Pools 14 and 15 support resources of considerable aesthetic and sporting value for the residents of Illinois and Iowa. They are also of great economic importance to the industry of cities adjacent to this portion of the stream.

The National Survey of Hunting and Fishing, the second nationwide economic survey of sport fishing and hunting in the United States, shows that over 30 million fishermen and hunters spent almost four billion dollars pursuing their sport in 1960. This compares with approximately 25 million hunters and fishermen spending about three billion dollars in 1955.

As a nation, we play a little more each year; our work week has grown shorter during the first half of the century. Besides having a greater amount of time for play, we also have increased the amount of money spent on pastime activities. The families of our nation are choosing the more aesthetic values of life. They are interested in the real values and will pay for them.

In 1960 one man in every four fished and one man in every five hunted. In 1960 one woman in every ten fished and one woman in sixty-nine hunted. Although specific statistics are not available for the residents of the Clinton-Quad City reach, we would be surprised if they differed greatly from the national average. Statistics such as these indicate the tremendous potential for the provision of services and supplies for recreation associated with fish and wildlife, especially in areas as popular for these pursuits as is the Upper Mississippi.

It is no wonder then that our Bureau is much concerned with any pollution situation that might affect the fish and wildlife resources of the River.

It should be the primary purpose of individuals, communities, state and Federal agencies having an interest in the Mississippi River to develop a mutual comprehensive program for eliminating or reducing the pollution of this interstate stream. To this end, the Bureau of Sport Fisheries and Wildlife will work closely with any group or agency having an interest in the improvement and maintenance of the water quality of the River.

Thank you.

CHAIRMAN STEIN: Thank you, Mr. Nord.

Are there any comments or questions? Mr. Houser?

MR. HOUSER: No, sir.

MR. KLASSEN: I would like to ask Mr. Nord two questions. The first question is one purely for information, and the second one is to get the opinion from an expert on a rather far-fetched conclusion that I heard recently expressed by a duck hunter. It might have some significance here.

You mentioned specifically about the pollution, I think, affecting the bed of the stream and the aquatic plants, with which I thoroughly agree. What, in your opinion, is the effect of silt on the aquatic habitat?

And the second part of that, assuming that silt does affect it, where, in your opinion, is the principal source of the silt that might be coming into this area of the river?

MR. NORD: In answer to the first part of your question, I would say that silt under certain conditions can be just as toxic to aquatic organisms, especially plant growth, as some of your chemicals. In other words, if you have siltation to the point where the light is cut off from the water itself, not allowing the penetration of sunlight, or if the load is so great as to actually cover some of these plant beds, they can be entirely eliminated either through suffocation or covered.

The second part of your question, I would say that, going back into the history of land management, most of your siltation comes, of course, from your headwater areas. It comes off of many of the farms, either through, you might say, normal operations, farming operations, or improper farming operations, of course, will increase that load. There is a certain amount of that going on all the time under natural conditions. That is the way hills get eroded down to flats.

Certainly much of that silt, though, comes from erosion of your uplands, and every means, of course, should be taken to eliminate that as a potential source of silt pollution.

MR. KLASSEN: The other question is one purely for my information. I don't like to take this opportunity to get personal information, but I think it might bear on this subject. The report here has indicated that in some of the biological studies the sludge worms we normally find in sludge deposits on the bottom of the stream. It is my understanding that there are certain species of ducks that utilize these worms as a source of food, and when a stream is cleaned up and there are no more sludge deposits, therefore no more worms for the bottom feeders, that as far as this particular species of duck is concerned the duck population decreases. Is there anything to that?

MR. NORD: I can't answer that question as directly, perhaps, as you would like to have me answer it. There may be certain food value in some of the sludge worms, and so forth. On the other hand, there are areas with sandy bottoms that have large numbers of organisms, especially your little mollusk type of organisms, that are a favored food of ducks and have over the years provided very good food. I don't think they are dependent upon the sludge worms.

It is true that certain pollution that might be harmful to human water supply, for example, may enrich streams or other bodies of water to the extent that they may provide improved habitat for fish and wildlife, but it is a matter of degree, and we can get to a point where it is no longer a matter of improving habitat. You get to a place where it actually becomes toxic.

MR. KLASSEN: Thank you.

CHAIRMAN STEIN: Mr. Nord, you have given a pretty graphic description of the use of the river area between Clinton and the Quad Cities, and assuming the conditions of the river we can imagine what happens with the exposure of people when they go down and come in contact with the water.

I wonder if you could possibly tell us what effect conditions like that may have on the habitat for fish and other aquatic life and wildlife, and if the pollution loadings were substantially reduced whether you would consider that that would improve this area for fish, aquatic life and wildlife?

MR. NORD: I am sorry to say that we don't have the volume of records, perhaps, that we should have as to the exact effect of the pollution loads, at least in this area, on fish and wildlife. Undoubtedly there are substantial effects on fish and wildlife, and if not in this area perhaps areas downstream from this area. We hope to expand our studies and we hope to be able to conduct studies somewhat of the same nature as are being conducted on the Ohio River at the present time, where the University of Louisville has a contract for making studies of the effects of pollution of that stream on fish and wildlife for the Ohio River Sanitation Commission.

It is rather difficult to say without specific studies. To date our funds, our personnel, the time that we have been able to devote to the river have had to consider the river in quite general terms. We try to maintain a good stream, that is good management of fish and wildlife. On the other hand, we realize that we are lacking in the opportunities to do some of the things that we feel should be done and have recognized should have been done many years ago, and we are very much interested in the new approach, the new emphasis on this whole pollution problem, and that we can work along with the Department of Health, Education and Welfare in expanding these studies to give us more specific information on just those problems.

CHAIRMAN STEIN: Thank you.

Are there any further comments or questions?

Thank you very much, Mr. Nord.

At this point, I would like to read a telegram addressed to the Chairman of the Conference. It says:

"Iowa Division of Izaak Walton League of America strongly urges and supports the action and program of pollution abatement. All necessary steps used to this end are encouraged."

Signed R. C. Russell, President Iowa Division Izaak Walton League of America, Iowa City, Iowa.

At this point, I think we may recess for lunch one hour and a quarter. We are going to start promptly at a quarter to two. Thank you.

(NOON RECESS)

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AFTERNOON SESSION, THURSDAY, MARCH 8, 1962

CHAIRMAN STEIN: May we reconvene?

Mr. Poston.

MR. POSTON: We have Mr. Carbine, of the Bureau of Commercial Fisheries, to make a statement.

MR. CARBINE: Mr. Chairman, ladies and gentlemen. It is indeed a pleasure to be here and have an opportunity to present the responsibilities and interests of the Bureau of Commercial Fisheries in the treatment and prevention of pollution.

I am W. F. Carbine, Regional Director of the Great Lakes-Central Region of the Bureau of Commercial Fisheries, loated in Ann Arbor, Michigan.

The Fish and Wildlife Act of 1956 (70 Stat. 1119, Public Law 1024, 84th Congress), and a wide variety of statutes enacted over the years, authorize a broad range of activity by the Bureau of Commercial Fisheries. The National fish policy established by the 1956 Act places high on the list of goals the responsibility for the economic betterment of the commercial fishing industry in all its phases--production, processing, and distribution. This responsibility extends to the control and prevention of pollution. Pollution is probably the primary factor today that limits the production of food fish and, in fact, threatens future fish production. The measure of pollution as used here is the suitability of water for a required use. The Bureau of Commercial Fisheries is concerned with the suitability of the waters of the Mississippi River for production of fish and fish food organisms.

The fishermen of America have played a unique part in this country's economy since its founding. Fisheries are still of major importance to many sections of the country. Employment, direct and indirect, is furnished to 500,000 citizens. Today our fisheries supply over five billion pounds of fish each year, about half of which is used for human food. The fish catch, when processed, is worth over a billion dollars annually at the retail level.

The commercial fisheries of the Mississippi River are not particularly vital to the total economy of the valley. The present commercial catch of about 80 million pounds, worth approximately eight million dollars, is only a small percentage of the total U. S. catch. Likewise, the 10,000 fishermen are only a small fraction of the total employment of the valley. The commercial fishery nevertheless has contributed materially and steadily to the total benefits derived from this mightiest of rivers. Their worth could be increased materially. When fully developed, and with pollution under control, the commercial fishery of the Mississippi River and her vast tributaries can be expected to produce upwards of a billion pounds of fish annually. This choice animal protein is going to be needed in a few short years to feed the world's expanding human population.

The recreational use of our fishery resources is showing phenomenal growth. Large industries, such as sport fishing gear manufacturers, party-boat operators, and others, are supported by the more than 20 million Americans who fish for sport each year.

Our aquatic resources are far more valuable than is indicated by the number of persons they support or the dollar value of their products.

They are living, renewable resources which can continue to make their contribution to our welfare forever if we treat them wisely.

They enrich our diet with variety.

They promote our health, providing dietary supplements such as vitamins, trace minerals, and the essential requirements in wider variety than any other class of foods.

They have, because of the unique properties of their proteins and oils, potential uses as pharmaceuticals and industrial chemicals.

They supply to our animal industries vital proteins, fats and growth factors.

They develop the seafaring qualities of our people and provide marine facilities and equipment sorely needed by an America now faced with transoceanic problems and wide responsibilities in a changing world.

The Fish and Wildlife Act of 1956 recognizes that fish and shellfish are capable of making a valuable continuous contribution to the national economy, food supply, and health, recreation, and well-being of our citizens. When these resources are properly protected, properly developed, properly managed, and properly utilized, the Act considers them capable of being greatly increased. Control of pollution is one conservation measure that must be practiced. The alternative is destruction by neglect.

It is the National Fish Policy to:

Increase and maintain forever, for the people of the United States, a fishery resource capable of yielding the maximum annual product.

Strengthen and maintain a vigorous fishery industry by assuring full and fair access to the American market.

Do these things in partnership with the States and in full accordance with our international obligations, and without sacrificing the system of free enterprise.

In pursuing these policies, the Federal Government has a responsibility to the public as a whole to see that our fishery resources are utilized to the fullest economic extent without damage to their future productivity.

A deeper look into the complex problems facing our fishing industry today is a look into the major trends operating over decades that have produced the critical problems now facing us.

Our population growth, the change from rural to urban economy, and industrial development have caused increasing complications: first from domestic wastes, then from dams, industrial wastes, channel and harbor improvements, marsh drainage and conversion of marshlands and backwaters to residential and industrial sites, more recently from the widespread and rapidly expanding use of insecticides, herbicides, detergents, and a host of other technological developments, and now the possible dangers introduced by disposal of radioactive wastes from research, industry, and other uses.

Our raw material, the fishes, and the organisms upon which they depend for food, consist of the living resources in rivers, lakes, and the sea. They are the property of no man until caught. In life they are the concern of the people and can be conserved and managed by governmental authority--local, state, Federal or international. Hidden as they are beneath the surface of the water, special and complicated techniques are needed to find out how they can be managed so as to yield maximum sustained production. Sound management requires an understanding of the nature of living resources. The stocks of fish which support our fisheries are self-renewing. They do not exist in limited quantities, like our mineral resources, to be used once and thereafter be gone forever. Living resources can endure forever, and therefore are more valuable, by far, than the annual yield would suggest. This is true only if we manage them wisely, and we can do this only if we understand the habits of the aquatic animals and plants and their inter-relationships with each other and with the environment.

Where the environment becomes changed or restricted by pollution, the fish population and fish food organisms have to adjust themselves to altered conditions. This produces fluctuations of abundance, changes in species composition, changes in growth rate, and many other things, most of which do not benefit mankind. This has happened in the Mississippi River, where the environment has been changed or rendered unfit by pollution.

The mighty Mississippi River, with its many tributaries, can rightfully be included among our nation's major natural resources. Through the years we have been led to believe that the Mississippi can be little affected by the activities of man. Recent studies and observations show, and we have heard a lot about it so far today, that many sections of this river have been adversely affected by pollution. The severity of the pollution is evidenced by violent fluctuations in species composition, not only by fishes but other aquatic organisms. The choicer fishes are being replaced by less valuable species which have a greater tolerance for turbidity and low oxygen. The gradual accumulation of wastes day after day may soon render the water a barren wasteland to fish.

Most important to fishery utilization is the capacity of a fish population to restore itself after its numbers have been reduced or changed. For this reason, all is not lost. By cleaning up pollution, the restoration of our fishery resources can become a reality. Once again we will be able to see, capture, and eat the choicer varieties of fish which are no longer present or are present in limited numbers.

I think you.

CHAIRMAN STEIN: Thank you.

Any questions or comments?

MR. KLASSEN: I would like to ask one question. You referred to the properly-controlled fish habitat and their yield. In your opinion, how many pounds of fish protein under those conditions should one acre of water yield annually?

MR. CARBINE: Well, it depends--

MR. KLASSEN: I have heard various figures. I would like to know.

MR. CARBINE: In general, you mean, not for the Mississippi? We have no record or no way of knowing what the Mississippi might produce.

MR. KLASSEN: Let's say in a square mile of water in the Mississippi in this area, if the fish culture and rearing was under these controlled conditions that you describe as necessary, how many pounds of fish protein would this square mile of river produce annually?

MR. CARBINE: I haven't those calculations with me. Let's go on an acreage basis. Let's say between 250 and 500 pounds.

MR. KLASSEN: An acre?

MR. CARBINE: Yes. That would be a fair guess on it.

MR. KLASSEN: That is better than raising cattle. I think they figure 150 pounds of protein.

MR. CARBINE: In certain areas of the United States it is possible to get better than 4,000 pounds of fish per acre. That is under intensive cultivation.

CHAIRMAN STEIN: Mr. Poston.

MR. POSTON: The National Park Service was unable to be represented, but did send us a letter, and I have asked Mr. Rademacher of my staff to read this.

MR. RADEMACHER: Mr. Poston, ladies and gentlemen.

This is a statement prepared for this Water Pollution Conference by Region Two of the National Park Service. My name is John M. Rademacher, a Senior Sanitary Engineer with the U. S. Public Health Service in Chicago.

"The National Park Service is intensely interested in the problem of pollution as it affects the water resources of our Nation. Obviously, we are concerned in the areas of the National Park System--concerned with keeping the natural lakes and streams free from pollution, and also in providing clean, sanitary water for the using public. Fortunately, many of the parks are near the headwaters of our streams, upstream from cities and industry, so that pollution problems are not severe. But this is not always so; and in some of the newly authorized areas and in others which have been proposed or are being studied for possible National Park status, pollution is present and of serious concern.

"Beyond these direct interests, the Service is deeply involved also. Currently, the nation is experiencing a dramatic increase in outdoor recreation activity, imposing unforeseen pressures on parks and recreation areas everywhere, Federal, State, and local. To help in meeting this situation, the National Park Service, under authority of the 1936 Park, Parkway and Recreational Study Act, is preparing a Nationwide Recreation Plan cooperatively with interested Federal, State, and local agencies. The objective is to make recommendations for preservation of important natural and historical resources while they are still available and for the development of other areas to meet the needs of our growing population.

"Water is a basic natural resource of the highest importance. Just so, also, water has always been a major park attraction. The present trend in park use, with a strong new accent on boating, is even more in this direction. Now, too, this interest in the enjoyment of the out-of-doors must be considered in the broader context of its part in a way of life and its significance in population shifts and growth, a matter which, in fact, is receiving increasing attention by business and industry. Implicit in this picture is the importance of clean, attractive, unpolluted streams and lakes or man-made reservoirs.

"In contrast to this National need, we appear to be losing ground--losing these water resources to private ownership, to the inroads of urban and suburban spread, to industrial developments, to irrigation, and to the sharply increasing consumptive uses of all these. To impose pollution on these shrinking resources is a shame which the nation can no longer afford to tolerate.

"The National Park Service, in its comprehensive studies, therefore, is giving particular attention to our shorelines, to our lakes and rivers and our reservoirs, to areas of natural significance such as the Cape Cod National Seashore, which has just been authorized, or the Allagash in Maine and the Current-Eleven Point Rivers in Missouri on which legislation is now before Congress, and also, state by state, to streams and other bodies of water which may warrant administration at the state or local level. In all of these, pollution is a consideration, pollution from sewage and other human and industrial wastes, and also a growing concern for the new and still little understood problems resulting from highly toxic chemicals and from detergents which may have serious accumulative effects on the ecology of our streams and lakes. In some cases, pollution forecloses the opportunity, for the present at least. In many, it adversely affects the enjoyment of swimming, boating, fishing, and other water sports, not to mention the related though more passive enjoyment of the scene.

"Aside from specific sites suitable for parks or recreation areas, there are many sections of our rivers and streams which could provide attractive opportunities as canoe routes or riverways for boating if accessible to the public and if the quality of water were good. In some sections of the country where lakes and reservoirs are not available, the public must turn to the rivers for enjoyment. A good example is the Missouri where it runs between Nebraska and Iowa. Here the river is receiving increasing use since it is now reasonably controlled by upstream reservoirs. But pollution of this stretch, while now getting more earnest attention, is still a major limiting factor for public enjoyment.

"Along with these broad planning interests, the Service also serves in an advisory capacity to the Corps of Engineers, providing assistance as requested on the recreation aspects of their water control projects, and to the Bureau of Reclamation, representing them, under an inter-Bureau agreement, on recreation matters for all of their projects. In this responsibility, the Service is interested not only in the water quality of the streams and the reservoirs as such, but also in development and management plans which will avoid, so far as possible, contamination from the public use itself.

"In summary, then, the National Park Service is very much interested in and concerned about pollution throughout the country. It is hopeful that the Nationwide Recreation Plan report, scheduled for publication next year, may be of help in calling attention to this problem as it relates to parks and recreation areas and in making recommendations for the preservation of lakes, streams, and other natural water resources for the enjoyment of the public."

CHAIRMAN STEIN: Thank you, Mr. Rademacher.

Are there any comments or questions?

MR. POSTON: I would like to clarify the person who wrote this paper. I do not believe that that was mentioned for the record.

MR. RADEMACHER: That is right. It is Mr. Baker, I believe.

MR. POSTON: Would you give that? Mr. H. W. Baker, Regional Director, of Omaha, Nebraska.

MR. RADEMACHER: This I do not have on the paper, Mr. Poston. I was hoping you would mention it. Mr. H. W. Baker.

CHAIRMAN STEIN: Any further questions or comments?

MR. POSTON: This is a concluding statement.

CHAIRMAN STEIN: Well, on this, I think for the purposes of the record, that paper said on the west side of the state that pollution was getting earnest consideration. I think we should give Sioux City, Iowa, some credit for their earnest consideration in constructing sewage treatment systems to the amount of about seven million dollars, authorized by a bond election. I think that is pretty earnest. They have recognized their obligations and are doing it.

MR. HOUSER: I might add that the City of Council Bluffs on the west side of Iowa also has a sewage treatment plant under construction.

CHAIRMAN STEIN: By the way, since we mentioned the other state too, Nebraska, Omaha is also starting construction, so plants are being constructed there.

Mr. Houser, would you want to present the statement for the State of Iowa? And then subsequently you may want to call on all the people who want to make statements.

MR. HOUSER: This is a statement of the State Department of Health acting as the Water Pollution Control Agency of Iowa.

The Iowa State Stream Pollution Law, Sections 135.18 to 135.29, Code of Iowa, recognizes the conveyance of sewage and wastes to be a legitimate use of a river or other stream. But it authorizes the State Department of Health to order a change in the method of discharging sewage and wastes when a condition of pollution exists. We do not agree entirely in the report presented today in that it depicts the condition of pollution much worse than it is. Nevertheless, we have held that a condition of pollution does exist in the Mississippi River below Clinton, Iowa, and have ordered the abatement thereof under provisions of the law. The following is a list of the municipalities and industries to whom the orders were issued and the provisions therein.

City of Clinton. The total project of interceptor sewers and sewage treatment facilities is to proceed in two sections. The first section consists of an interceptor sewer from the plant site along Beaver Slough to 5th Street or above, another interceptor in Mill Creek Valley which will divert a portion of the sewage now discharged via the 1st Avenue outlet, and primary treatment facilities adequate for this portion of the sewage to be collected. A contract is to be awarded for construction of this section on or before October 1, 1962.

The second section is to consist of the remaining portion of the interceptor sewer extending upstream to the uppermost existing outlet discharging into the river and adequate primary treatment facilities for the sewage collected. A contract is to be awarded for this construction on or before October 1, 1965.

On or before February 1, 1962, the City was to determine the volume and character of wastes to be discharged into the municipal sewer system from industries not at that time connected.

Progress reports are to be submitted to the State Department of Health beginning February 15, 1962, and at approximately six-month intervals thereafter until a contract has been awarded for construction of the second section. In the February 15, 1962, progress report it is stated that:

1. Surveys have been made of the proposed treatment plant site and a suggested plant layout prepared for submission with basic design data.

2. Surveys are being made of the proposed interceptor routes.

3. Studies have been made of the industrial wastes, a report thereon prepared, and as soon as printed will be submitted to the City.

4. The basic design data is being prepared for approval of both the City and the Iowa State Department of Health.

5. Topographic survey notes of the proposed interceptor routings are being plotted as received.

City of Camanche. The interceptor sewer has been constructed, a site for a sewage treatment plant has been acquired, and final construction plans have been submitted to this Department for approval. A contract for construction of the sewage treatment plant is to be awarded on or before October 1, 1962.

Clinton Corn Processing Company. Discharge of process wastes containing carbon is to be discontinued on or before July 1, 1963. The Company is to proceed immediately with in-plant modifications which will reduce settleable, floatable, and dissolved organic solids discharged into the river, and on or before October 1, 1965, shall have installed modifications or clarification equipment for practically complete removal of these solids and shall have further reduced the total organic solids discharged into the river. Domestic sewage is to be discharged into the city sewer when available or separate treatment facilities installed.

Progress reports are to be submitted to the State Department of Health on July 15, 1962, and at approximately six-month intervals thereafter.

The Collis Company. Discharge of process waste waters in such quantity and concentration that will result in pollution is to cease. Domestic sewage and process wastes are to be discharged into the municipal sewer when constructed as part of the city project.

The following industries in Clinton are to discharge domestic sewage and/or process waste waters into a city sewer when available or install separate treatment facilities: The Pillsbury Company, Curtis Companies, Inc., Swift and Company, and Clinton Wire Cloth Company. All separate treatment facilities to be installed on or before October 1, 1962.

These orders were approved by the Iowa Natural Resources Council in accordance with Section 135.20 of the law. Other statutes authorize the Resources Council to administer a program for conservation, development and use of the water resources of the state. (Chapter 455A, Code of Iowa)

In addition to the issuance of these orders, the following action has been taken to abate and prevent the condition of pollution:

The City of Clinton was denied a permit to install a sewer which would discharge through a new outlet into the River.

A permit was granted for the installation of a settling tank on the sewer discharging untreated sewage into the River from the Interstate Power Company.

After a thorough study of the quantity and characteristics of the process waste waters from the E. I. duPont de Nemours Company industrial plant by the State Department of Health and the State Conservation Commission, it appeared that these waste waters would not result in a deleterious effect on uses of the River below the outlet if discharged through a dispersal system which would provide adequate mixing with the river flow. A permit for disposal of the wastes by a dispersal system was therefore issued, with the stipulation that the permit would be withdrawn if unsatisfactory conditions developed in the river.

The Dairypak Company and Maquoketa Company have septic tank installations for treatment of sanitary sewage, and the Clinton Rendering Company has a septic tank for settling of floor washings.

The Town of LeClaire, Iowa, is now constructing sewers and a sewage treatment plant. The plans and specifications for this project have been approved as meeting the requirements of the Department and the Joint Resolution of the States of Illinois, Wisconsin, and Iowa water pollution control agencies for control of pollution in the Mississippi River.

The Aluminum Corporation of America, operating an industrial plant between LeClaire and Davenport, Iowa, has had sewage and industrial waste treatment plants in operation for several years before the Joint Resolution was effective. Secondary treatment and chlorination are provided for the domestic sewage as protection to the public water supply for the Cities of Davenport and Bettendorf, Iowa.

Mr. Chairman, I attach hereto copies of the Iowa Stream Pollution Law and the Joint Resolution of the Illinois, Wisconsin, and Iowa water pollution control agencies.

IOWA STATE DEPARTMENT OF HEALTH

EXCERPTS FROM CODE OF IOWA

IOWA STREAM & LAKE POLLUTION LAW

135.18 Investigation upon petition or on initiative by department. The department may, upon its own initiative, study, investigate, or survey any stream, watercourse, lake, or other body of water within the state and bordering on the state, and may determine ways and means of eliminating pollution and may determine methods, so far as practicable, and necessary in the light of the use to which the water is being, or may be, put, of controlling the extent of such pollution of said waters. The department shall make such investigations upon the written petition of:

1. The council of any city or town.
2. The local board of health.
3. The trustees of any township.
4. Twenty-five residents of the state.
5. Any state agency or agencies.

For the purposes of this chapter, pollution means such contamination, or other alteration of the physical, chemical or biological properties, of such waters of the state, or such discharge of such liquid, gaseous or solid substances into such waters of the state as will create a nuisance or render such waters harmful or detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life.

135.19 Hearing necessary. Whenever such complaint of pollution of any of the aforesaid waters is filed with the department, or whenever it acts upon its own initiative, it shall make a full and complete investigation which may include such engineering studies, bacteriological, biological, and chemical analyses of the water and location of the sources of contamination as may be found necessary, and if the pollution taking into account the use to which the water is being, or may be, put, is found to exist, the department shall make an order fixing the time and place for a hearing which shall be not less than ten days thereafter. Such hearing shall be public and shall be conducted, so far as possible, in the same manner as a court hearing, and every alleged offender shall have the right to appear by counsel, present testimony, and examine witnesses.

135.20 Time and place of hearing - order.

1. Notice of the time and place of hearing shall be served upon each alleged offender at least ten days before said hearing in the manner required for the service of notice of the commencement of an ordinary action in a court of record.

2. After such hearing the department may, if it believes the alleged offender is guilty of the charges, enter an order directing such person to desist in the practice found to be the cause of such pollution or corruption, taking into account the use to which the water is being, or may be, put, or it may order a change in the method of passing waste materials into the water so that the same will be rendered innocuous and harmless.

3. No order shall be issued under the provisions of subsection 2 of this section without the written approval of a majority of the members of the Iowa natural resources council.

4. If any such change is ordered, unless such practice is rendering such water dangerous to the public health, a reasonable time shall be granted to the offender in which to put in use the method ordered.

5. The department shall keep a complete record of such proceeding, including all the evidence taken, and such record shall be open to public inspection.

135.21 Appeal from order. An appeal may be taken by the aggrieved party from any order entered in such proceeding to the district court of the county in which the alleged offense was committed. Such appeal shall be perfected by serving a written notice on the commissioner of public health within thirty days of the entry of such order. The hearing on appeal shall be tried as a suit in equity and shall be de novo. The court may receive additional testimony and may affirm, modify, or reverse any such order. The setting aside of any such order of the department by the court upon any such appeal shall not prevent or preclude said department from again instituting proceedings against the same person, firm, corporation or municipality when in its opinion the public health is endangered.

135.22 Transcript. Within thirty days after an application for an appeal is filed with the commissioner, he shall make, certify, and file in the office of the clerk of the court to which the appeal is taken, a full and complete transcript of all documents and papers relating to the case.

135.23 Trial. The first term after the appeal is taken shall be the trial term, and if the appeal is taken during a pending term, it shall be triable during such term at any time after ten days from the date that the transcript is filed by the commissioner. The hearing on appeal shall be tried as a suit in equity and shall be de novo.

135.24 Injunction.

1. Any person, firm, corporation, municipality, or any officer or agent thereof causing pollution as defined in Section 135.18 of this chapter of such waters of the state or placing or causing to be placed any wastes, including sewage, industrial waste, and all liquid, gaseous or solid substances, in a location where they will probably cause pollution of such waters of the state may be enjoined from continuing such action.

2. It shall be the duty of the attorney general, only on request of the department, to bring an action for an injunction against any person, firm, corporation, municipality, or agent thereof violating the provisions of this section. In any such action any previous finding of the department after hearing or due notice shall be prima-facie evidence of the fact or facts found therein.

135.25 Contempt-penalty.

1. Failure to obey any order issued under the provisions of section 135.20 made by the department with reference to matters pertaining to the pollution of waters shall constitute prima-facie evidence of contempt. In such event the department may certify to the district court of the county in which such disobedience shall occur, the fact of such failure. The district court shall then proceed to hear and determine the matter and, if the order be found to be reasonable and lawful, to punish for contempt to the same extent as though such failure were in connection with an order made by the district court which is made punishable by contempt.

2. Any person, firm or corporation, or any officer or agent thereof, found guilty of contempt under this section shall be

fined in a sum not to exceed one thousand dollars. The penalties provided in this section shall be considered as additional to any penalty which may be imposed under the law relative to nuisances or any other statute relating to the pollution of streams or other bodies of water, and a conviction under this section shall not be a bar to prosecution under any other penal statute.

135.26 Permits issued.

1. It shall be unlawful to carry on any of the following activities without first securing a written permit from the department, as is required by it, for the disposal of all wastes, including sewage, industrial waste and all liquid, gaseous or solid substances, which are or may be discharged thereby into the waters of the state.

a. The construction, installation or modification of any disposal system or part thereof or any extension or addition thereto.

b. The construction or installation of any industrial or commercial establishment or any extension or modification thereof or addition thereto, the operation of which will cause pollution as defined in section 135.18.

c. The construction or use of any new outlet for the discharge of any wastes directly into the waters of the state. Provided, however, that no permit shall be required for any new disposal system or extension or addition to any existing disposal system that receives or may receive only domestic or sanitary sewage from a building housing or occupied by fifteen persons or less.

However, no permit shall be issued when the proposed use, when added to the existing uses or condition of such waters, will result in pollution as defined in section 135.18.

2. Plans and specifications for any waste disposal system covered by subsection 1 of this section shall be submitted to the department before a written permit may be issued, and the construction of any such waste disposal system shall be in accordance with said plans and specifications as approved by the department. In case it shall be necessary or desirable to make material changes in such plans or specifications, revised plans or specifications together with reasons for the proposed changes will be submitted to the department for a

supplemental written permit.

135.27 Plans of system filed. The department may require any owner of a waste disposal system discharging into any of the aforesaid waters to file with it complete plans of the whole or of any part of such system and any other information and records concerning the installation and operation of such system.

135.28 Rules and regulations.

1. The department shall have the right to establish procedure for the review of any reports, plans, specifications, or other data relative to any waste disposal system, written permits for which are required by section 135.26, and may make use of such assistance for such review as existing boards, commissions, and departments of the state may be able to render.

2. The department is empowered to adopt and enforce rules and regulations governing the method and manner under which plans, specifications, or other data relative thereto shall be submitted for waste disposal systems or for additions or changes to or extensions of such systems.

3. The department is empowered to adopt and enforce rules and regulations consistent with and not different from the provisions of this chapter restricting the polluting content of any waste material and polluting substances discharged or sought to be discharged into any of the waters of the state.

135.29 Sewage treatment. No sewage or any other waste liquid or solid substance of a decomposable, putrescible, oily, chemical, or other character whether treated or untreated shall be discharged directly into any state-owned natural or artificial lake, provided, that this this section shall not be construed as to prohibit the discharge of adequately treated sewage or wastes into a stream tributary to a lake upon the written permission of the state department of health and the state conservation commission.

MISCELLANEOUS PROVISIONS

135.38 Penalty. Any person who knowingly violates any provision of this chapter, or of the rules of the department, or any lawful order, written or oral, of the department or of its officers, or authorized agents, shall be guilty of a misdemeanor.

JOINT RESOLUTION
ILLINOIS SANITARY WATER BOARD
IOWA DEPARTMENT OF HEALTH
WISCONSIN COMMITTEE ON WATER POLLUTION

WHEREAS, the Mississippi River is an interstate stream bounding the States of Illinois, Iowa, and Wisconsin and pollution thereof originating in one state does or may adversely affect public health and public rights in adjoining states, thus creating problems of common interest and requiring correction by said states;

WHEREAS, sewage and industrial wastes now discharged into the river and its tributaries does or is likely to create a nuisance or render such waters harmful or detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate uses, or to livestock, wild animals, birds, fish or other aquatic life; and

WHEREAS, protection of public health and preservation of public rights demand that said waters shall be made suitable for all normal legitimate uses; now, therefore, be it

RESOLVED, that the Illinois Sanitary Water Board, Iowa State Department of Health, and Wisconsin Committee on Water Pollution, each does hereby agree to require the correction of existing and prevention of additional pollution within the boundaries of its state to the end that said waters may be maintained or rendered suitable for all purposes heretofore defined and that in the attaining of these objectives the guiding policy shall be the requirement that facilities for treatment of sewage and for industrial wastes shall provide at least effective sedimentation or equivalent, substantially complete removal of floating solids or liquids, and reduction of toxic materials to less than lethal limits for aquatic life, with the understanding that additional or special type treatment be required in those areas where water uses so dictate; and be it further

RESOLVED, that adoption of this resolution by the water pollution control agency of each state shall be evidenced by the signature of its executive officer

SIGNED, this 7th day of March, 1952, at Davenport, Iowa, for

ILLINOIS SANITARY WATER BOARD /s/ Clarence W. Klassen
Secretary

IOWA STATE DEPARTMENT OF HEALTH /s/ Walter L. Bierring, M.D
Commissioner

WISCONSIN COMMITTEE ON WATER POLLUTION /s/ Theodore F. Wisniewski
Director

CHAIRMAN STEIN: Thank you, Mr. Houser. Does that complete your statement?

MR. HOUSER: That completes my statement. I have a statement by the Iowa Natural Resources Council.

CHAIRMAN STEIN: Would you want to answer comments and answer questions on this portion first?

MR. HOUSER: Yes, sir.

CHAIRMAN STEIN: Mr. Poston?

MR. POSTON: I was a little unclear, I guess I didn't keep up with you, as to the requirements for the Clinton Company.

MR. HOUSER: Well, to state it in different words, the Clinton Company is to discontinue the discharge of carbon waste waters, which, incidentally, are those that show up on the photograph shown this morning, by July 1, 1963. This means that carbon will no longer be used; therefore, there will be no more carbon to be discharged.

Now, the other parts of the order required modifications within the plant in the methods of manufacturing the product so that the settleable and floatable solids which are visible as pollution materials, and also the dissolved organic solids which are not visible as pollution, will be practically eliminated. And the domestic sewage from the plant employees, washrooms, and so on, will be discharged into the city sewer when the sewer becomes available. There is no sewer there now, but it will be served by the interceptor sewer required to be built by the City of Clinton.

Does that explain it?

MR. POSTON: That is very good.

Now, the Climax Engine Company, were they included in this list that would discharge to the Clinton sewers?

MR. HOUSER: No. The Climax Company was not held by our department to be contributing to the pollution condition.

MR. POSTON: Is there any discharge from that company?

MR. HOUSER: Well, there was at one time, but the processes have been changed so that the oily wastes are no longer discharged.

MR. POSTON: Their sanitary wastes are taken care of through the city sewers, then, I assume?

MR. HOUSER: I can't answer that. I will check on it.

CHAIRMAN STEIN: I wonder if we could have that for the purposes of the record, what happens to the sanitary wastes of the Climax Company, when you get to it.

MAYOR A. H. DALL: Mr. Chairman, I believe that question I would like to answer. Climax is now connected to the sanitary district of the City of Clinton.

CHAIRMAN STEIN: In other words, you would pick up the sewage or youare picking--

MAYOR DALL: It would be picked up automatically.

CHAIRMAN STEIN: All right.

MR. POSTON: Now, one other I was concerned with, maybe I didn't hear, was the Interstate Power Company.

MR. HOUSER: Interstate Power Company has installed a settling tank for removal of solid materials from sanitary sewage. This meets the minimum requirements of our department.

MR. POSTON: That is all.

CHAIRMAN STEIN: Do you have any questions?

MR. KLASSEN: No.

CHAIRMAN STEIN: I would like a little clarification, Mr. Houser. If these municipalities or industries you named do not file a progress report, would that mean they are in violation of your order?

MR. HOUSER: Yes, sir.

CHAIRMAN STEIN: Now, is it true that you have to review plans and specifications and issue a permit before any of these treatment facilities can be constructed in the state?

MR. HOUSER: Yes. That is another requirement of the Stream Pollution Control Law.

CHAIRMAN STEIN: There is one other point for clarification. As I see this, either through housekeeping methods or industrial waste treatment or connection to the municipal system you have picked up all the sources of waste which are listed in that report and have provided some kind of treatment before discharge?

MR. HOUSER: That is right, sir.

CHAIRMAN STEIN: The only one we have, whatever wastes are going into the waters are the duPont Company, and that is through a dispersal system?

MR. HOUSER: That is right.

CHAIRMAN STEIN: Now, you didn't mention the date, as I recall, of this dispersal system. Is this in operation or--

MR. HOUSER: Yes, it has been installed.

CHAIRMAN STEIN: Oh, it is working now?

MR. HOUSER: Yes, sir.

CHAIRMAN STEIN: Are you going to make a survey of that or are you watching it to see what the effect is going to be?

MR. HOUSER: Yes. And I should say that we have noted no objections to conditions have been filed with us as a result of our own observations or observations of the State Conservation Commission.

CHAIRMAN STEIN: Is that dispersal system covered by a permit from the state?

MR. HOUSER: Yes, sir.

CHAIRMAN STEIN: Thank you.

Do you want to go on with your other statements from the Natural Resources Council?

MR. HOUSER: This is a statement signed by Othie R. McMurry, Director Iowa Natural Resources Council. The first paragraph I won't read. He merely expresses regret he couldn't be here personally.

"The Department of Health for the State of Iowa is charged by statute as the primary administrative agency to deal with pollution matters in rivers, streams, and lakes. Although the statute contains a provision whereby any pollution orders issued by the Department of Health must be approved by the Resources Council, the basic responsibility leading up to the issuance of the orders and the investigation thereof rests with the Department of Health.

"In reviewing pollution orders prepared by the Department of Health, the Iowa Natural Resources Council considers the overall effect upon the conservation, development, and use of the water resources within the state. Where corrective action can be instigated to improve the quality of the water resources, such action is considered desirable. In fact, a number of orders dealing with pollution problems in this reach of the river have already been issued by the Department of Health and approved by the Resources Council."

CHAIRMAN STEIN: Are there any comments or questions on that portion?

MR. POSTON: No comments.

CHAIRMAN STEIN: Mr. Klassen?

MR. KLASSEN: No.

MR. HOUSER: I would like to first call on the Honorable A. H. Dall, Mayor of the City of Clinton, Iowa.

I would like to call on you for a statement, your Honor.

MAYOR DALL: As an official statement for the city, as far as to conformity with the order that was issued by the State Department of Health on December 20, 1961, I may say this, that the City had already started procedure and already hired consultants and instituted a rate ordinance, rental ordinance, and our procedures were far in advance of the order that was issued by the Department of Health. We are fully cooperating with the Department of Health in every respect. We have had good cooperation from them also.

I do feel that our State Department of Health has done a tireless job of working this area. It has been a problem; it is still a problem of our community. It is a high financial burden both on the community as well as industries.

Nevertheless, we intend to fully conform with the order that was issued by the State Department of Health, and we intend to follow all the schedules as set up.

Beyond that, I have not much more to say. I assure you of all the cooperation possible.

CHAIRMAN STEIN: Thank you. Are there any questions or comments?

Mr. Klassen?

Mr. Poston?

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Thank you.

MR. HOUSER: I would like to call on now the Honorable Lewis Westgate, Mayor of the City of Camanche, Iowa.

MAYOR WESTGATE: I have a report here addressed to Mr. Houser, Director Division of Public Health Engineers.

The City of Camanche, Iowa, anticipates having the sewage treatment plant fully constructed and in operation by the end of 1962. The project left to be constructed consists of a primary sewage treatment plant to be located on property under easement from the U. S. Government adjoining Swan Slough, southwest of the main business section of Camanche, Iowa. The project left to be completed is the third and final phase of the project, and the plans and specifications are already approved and on file with the Iowa State Department of Health, Division of Public Health Engineers, except that the treatment plant capacity is being changed to accommodate a population of 4,000 instead of the originally contemplated 2,000.

The first stage of the overall project was the outfall sewer and part of the interceptor sewer constructed in 1958 and 1959. The amount expended on this phase of the program was in excess of $50,000, financed by funds in the sewer rental fund and general obligations bonds in amount of $40,000. The second stage of the overall project was the construction of an interceptor sewer and lift station in 1961, constructed at a cost figure of approximately $50,000, paid from cash funds available.

To help finance the program, the City of Camanche, Iowa, adopted a sewer rental ordinance on May 4, 1954, providing a rental fee of 50 cents per month for each user. In the year 1961, the sewer rental ordinance was amended to make the sewer rental 10 percent of the net water bill rendered for each premise . In addition, for the past four years, slightly less than the maximum millage rate of 7 mills has been levied in the sanitation fund to make funds available.

The third phase of the project has been ordered by the Iowa State Department of Health, and the City of Camanche is to award a contract on or before October 1, 1962. The revised plans and specifications are now in the hands of the Iowa State Department of Health, and it is hoped that final approval will be given in order that the project will be ready for advertising for bids the latter part of March or the first part of April. The total overall cost of the project left to be completed is $99,500, which will be financed by the $29,850 Federal Grant, general obligation bonds in the amount of $40,000 or $45,000, and the balance by cash on hand in the sewer rental fund and the sanitation fund.

It is the intention of the City Officials to proceed with the completion of the project as expeditiously as possible.

Respectfully submitted, Lewis Westgate, Mayor City of Camanche, Iowa.

CHAIRMAN STEIN: Thank you. Are there any comments or questions?

If not, thank you very much.

MR. HOUSER: I would like to call on Mr. H. A. Bendixen, President Clinton Corn Processing Company.

MR. BENDIXEN: Ronald Jurgensen, our Senior Vice-

President, will give our report.

MR. JURGENSEN: Mr. Stein, Mr. Poston, Mr. Houser, Mr. Klassen, ladies and gentlemen. My name is R. P. Jurgensen. I am Senior Vice-President of Clinton Corn Processing Company, and the statement which I am about to make is in behalf of this concern.

I would like to state, first of all, that our company and our entire organization is very much aware of the seriousness of the situation with regard to pollution of the Mississippi River and, in fact, of water conservation in our entire country and the importance of this matter. We have been working very hard for many years. In fact, we speeded up our efforts after the 1952 survey and the hearing which was held thereafter. Our attitude from the start has been one of cooperation, it is now, and it will continue to be in the future.

As stated in the report this morning by Mr. Coffey, since the original survey in 1952 we have reduced the population equivalent, the organic population equivalent, of our effluent by about two-thirds. This is on an overall basis and on a per bushel basis this has been a little more than 75 percent. This has been accomplished by very much testing, engineering study, together with several process modifications and equipment installations. In all, 13 major projects have been undertaken.

We are in receipt of an order from the Iowa State Department of Health, and this was spelled out by Mr. Houser just a few moments ago. Our intention is to conform with every part of this order. We intend to deposit our sanitary sewage in the interceptor sewer which will lead to the municipal treatment plant, and our industrial wastes we intend to reduce to an absolute minimum.

One of the features of this industrial waste which has received much attention is the presence of powdered vegetable carbon in our effluent. This presents a most difficult problem and has received much attention, much experimental work, and much engineering effort.

We have through our studies narrowed our methods to one of two. One would be to burn this material in our boilers. The other is to haul it to a location and use it as land fill. In any event, this material will be removed and will not be sent to the river by July 1, 1963, as the order calls for.

We have in our approved forecast of expenditures for 1962 money to do this work. We intend to spend it in the last half of 1962 and the first half of 1963. This is mostly regulated by the availability of equipment and delivery and installation time required for the equipment to do the job.

We have a department set up in our production area to handle this entire pollution problem. It is headed up by an engineer full time in the plant, and a full-time staff engineer is giving his attention to the problem as well. We have recently engaged Mr. Robert Bedoin, an expert in this field from Chicago, Illinois, to work with us and guide us in our whole effort.

CHAIRMAN STEIN: Thank you. Are there any questions or comments?

MR. POSTON: You commented relative to starting construction on this plant in the latter part of '62. I understood that this is because of the unavailability of equipment?

MR. JURGENSEN: It isn't entirely the unavailability. It is the delivery time from time of order until it is delivered and then to be installed. We have pinpointed the actual time of expenditure. I was trying to bring out the point that the money has been allotted and pinpointed as to time, and the regulating factor is the delivery time of suitable equipment.

CHAIRMAN STEIN: If you can, for the purposes of the record, this is up to you, would you care to say what is going to happen to that carbon?

MR. JURGENSEN: It will either be burned in our boilers or it will be used for land fill, depending on which is the more practical of the two. We would like to burn it in our boilers, but it presents a tremendous problem of transportation from its present situation location over to our boiler area.

CHAIRMAN STEIN: But in any event, you fully intend to comply with the terms of the Iowa order to keep it out of the stream?

MR. JURGENSEN: Absolutely.

CHAIRMAN STEIN: Are there any further comments?

Thank you very much.

MR. HOUSER: I would like to call on Mr. Dale R. Crockett, Manager Swift and Company.

MR. CROCKETT: Mr. Chairman, ladies and gentlemen. It is our tentative intention to discharge our sanitary wastes and our industrial wastes into the city sewer as soon as it is available. This will leave clean cooling water being discharged into the river.

MR. HOUSER: Thank you.

CHAIRMAN STEIN: Just one moment. What temperature will that cooling water be when it goes into the municipal system?

MR. CROCKETT: The cooling water that goes into the river, sir?

CHAIRMAN STEIN: Yes.

MR. CROCKETT: I can't tell you the exact temperature, but it goes into our ammonia condensers for cooling at about 67 degrees, something like that, and would come out at approximately 70 degrees, perhaps.

CHAIRMAN STEIN: And your industrial wastes will go into the municipal system too?

MR. CROCKETT: That is the tentative plan, yes.

CHAIRMAN STEIN: You have not signed agreements with the city?

MR. CROCKETT: No, sir.

CHAIRMAN STEIN: Is that in the process of negotiation or is that still in the future?

MR. CROCKETT: Yes, sir, it is in the process of negotiation.

CHAIRMAN STEIN: It is in present process of negotiation.

MR. CROCKETT: The position is that the city has been given both the volume and character of our waste, and we are now waiting a quote from them of the cost to go into the system.

CHAIRMAN STEIN: Yes, sir.

MR. POSTON: Funds are available for this connection, I assume?

MR. CROCKETT: Yes, sir.

CHAIRMAN STEIN: Just for purposes of clarification, and possibly Mr. Houser or you may want to give that, the assumption is that you will go into the city system, but if you don't go into the city system are they going to be required to--

MR. HOUSER: The order provides that they either go into the sewer system or provide separate sewage treatment facilities.

CHAIRMAN STEIN: Thank you.

MR. HOUSER: May I call on Mr. Edwin S. Beal, of the Collis Company.

MR. BEAL: My name is Edwin S. Beal, President of the Collis Company.

Following the order from Mr. Houser's department, we took immediate remedial steps to safeguard against accidental loss of cyanide and other toxic chemicals from our plating plant. We have been in conference with Mayor Dall and his consultants as to what treatment we will need to give our industrial waste in order to discharge them into the intercepting sewer when it is installed. Our present sanitary waste is all processed through septic tanks at the present time, and at the time that the interceptor sewer goes past our plant will be discharged into the interceptor sewer.

CHAIRMAN STEIN: Any comments or questions?

MR. HOUSER: This is in compliance with the order.

CHAIRMAN STEIN: Any comments or questions?

Thank you very much, sir.

MR. HOUSER: Thank you.

Mr. E. Charles Rulifson, Manager of the Pillsbury Company.

MR. KOLL: I am not Mr. Rulifson. He couldn't be here. My name is Richard Koll. I am the Products Manager for the two local Pillsbury plants.

The Pillsbury Company recently submitted to the City of Clinton a report covering volume and characteristics of wastes discharged to the Mississippi River from its local plant. As stated in that report, the company plans to discharge all plant sanitary sewage into a city sewer as soon as such sewer is available. Plant changes necessary to accomplish this will be completed by that time. No plant industrial wastes are being discharged into the river. Therefore, after connection to the city sewer system, the Pillsbury Company would expect to discharge into the river only water from storm sewers, clear steam condensate, cooling and condensing water, and laboratory waste water.

CHAIRMAN STEIN: May I just ask you a question? Is your industrial waste of kind of a dry nature that isn't discharged at all or do you have some wet industrial wastes? If so, where does it go?

MR. KOLL: It is just a feed mixing plant, and we have no industrial wastes. Any wastes are hauled away to the dump.

CHAIRMAN STEIN: Thank you.

Any questions or comments? Thank you.

MR. HOUSER: Mr. Dwight S. Seaman, President Clinton Wire Cloth Company.

MR. GROOMS: I am C. V. Grooms. Dwight S. Seaman requested that I speak on his behalf.

He merely wished to convey to the Chairman holding this Conference and to Mr. Houser the fact that he wants to cooperate with them a hundred percent. He has a small plant running between twelve and eighteen employees. He is three hundred feet from the nearest sewer. He contemplates hooking onto the Clinton sanitary sewer when it is put by his place of business.

CHAIRMAN STEIN: Thank you, sir. Where is your waste going now, into a septic tank or just--

MR. GROOMS: No, sir, not running into a septic tank. It is running into a pile of rocks on the river bank, which in effect does give some protection from getting the solids into the river.

CHAIRMAN STEIN: Thank you.

MR. HOUSER: Mr. J. F. Stuard, Jr., Works Engineer, E. I. duPont de Nemours and Company, Inc.

MR. STUARD: Chairman Stein, Mr. Houser. As has been stated, this is a statement on behalf of E. I. duPont de Nemours and Company for the Clinton plant, and I am the Works Engineer, J. F. Stuard.

The duPont Company started construction of its Clinton plant in 1940 and has produced cellophane there continuously since March, 1941. Size of the plant was approximately doubled in 1946 and 1947, and the plant was again expanded in 1956 and 1957. The plant today has approximately 1,000 employees. However, since operations are continuous--twenty-four hours a day, seven days a week--less than 600 employees are ever on the plant premises at any one time.

The problem of waste disposal has been one of major concern on the part of management since the plant was in the planning stage. Waste disposal systems were incorporated into the original plant design, and have been the subject of constant study and improvement during the ensuing twenty-one years.

Throughout the entire period, the plant management has cooperated fully with State health authorities in their efforts to abate water pollution. A report of the Iowa State Department of Health, Division of Public Health Engineering, made in October, 1961, notes that sanitary sewage from duPont's Clinton cellophane plant is treated in septic tanks prior to discharge into Beaver Channel. A major portion of the plant's septic tank system, incidentally, was completely rebuilt and enlarged in 1958.

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The report also notes that after careful consideration of the plant's waste characteristics by the State Department of Health and the State Conservation Commission, a permit was issued for disposal of the plant's industrial effluent to the river through an outfall dispersal system. Since this system was installed in 1960, the report says, "it has not appeared that the wastes are detrimental to the use of the river below the point of discharge".

As recent examples of the type of incremental improvements which the plant has been able to effect through its continuing process studies: During 1961 process modifications were made so that insoluble waste alkali cellulose is now eliminated from discharge to the river. This year we are introducing process changes in cellophane coating which will also contribute to reduction of biochemical oxygen demand of the plant effluent.

Another step in this direction is the changing pattern of production. Formerly, practically all cellophane produced by the plant was coated with nitrocellulose compounds. The pattern of the cellophane industry is now in the direction of polymer coatings. Today, approximately 7 percent of the cellophane produced by this plant is polymer-coated; in the next few years this proportion will continue to increase. This conversion will result in further reduction of biochemical oxygen demand.

It is our intention to continue to operate our plant in such a manner that it will be an asset to the community.

CHAIRMAN STEIN: Are there any comments or questions?

MR. HOUSER: No, sir. Thank you.

CHAIRMAN STEIN: I have one. As I understood, your sanitary sewers from your employees is now going into a septic tank arrangement, is that correct?

MR. STUARD: Yes, we have several septic tanks.

CHAIRMAN STEIN: Have you any intention of connecting to the municipal system or isn't that contemplated?

MR. STUARD: We are too far from the system to be practical.

CHAIRMAN STEIN: Now, another. You do have a permit from the state for these septic tanks?

MR. STUARD: Yes, sir, we do.

CHAIRMAN STEIN: Would you care to characterize the nature of the wastes you are dispersing through this dispersal system now? Are they largely organic wastes?

MR. STUARD: It is a combination of both organic industrial waste and inorganic waste, basically that.

CHAIRMAN STEIN: And the organics are not creating, as far as you or the state know, any deleterious effects on the stream?

MR. STUARD: As far as we are able to determine.

CHAIRMAN STEIN: Now, the inorganics, as I understand the nature of inorganics, last a pretty long time and don't stabilize as organics. Is there any problem of these inorganics coming down from your wastes or have you any knowledge on that?

MR. STUARD: I have no knowledge of any detriment from that.

MR. HOUSER: I believe, if I remember correctly, the chemical analysis of the wastes indicated the main constituents of inorganics to be sulfates. Is that correct?

MR. STUARD: Yes, we have sulfates.

CHAIRMAN STEIN: In what quantity?

MR. HOUSER: Not in quantity that we felt would be detrimental to the use of the water downstream.

MR. POSTON: As I understand it, your treatment consists of a diffusion system--

MR. STUARD: That is right.

MR. POSTON: --to spread the waste in the waters of the river. Is there any testing procedure that you carry on regularly to determine the adequacy of this treatment that you do on a daily basis to determine that the equipment is intact? Perhaps a barge or something else has torn it down.

MR. STUARD: Our discharge is protected by piling, which would be an evidence of any impact of that nature, and we do inspect this area daily for the most part. We made a complete survey of the grade of discharge prior to the installation of our new effluent, and then we made a similar grade survey afterwards, and we noted considerable improvement. This has been reported to Mr. Houser. We have this substantiated with aerial photos also.

MR. POSTON: That is all I have.

CHAIRMAN STEIN: I think we would all like to make a comment, that we are all cognizant of the problem--not wanting, certainly, any industry to go to any expense of putting up treatment for wastes that don't interfere with water quality, but we have problems, and we have experienced this before, where industries have put in a process where they are discharging an inorganic through a diffuser or other such device, then if other industries come along, the assimilative capacity of the stream might be used up, there may be a question in the future for re-evaluation. I think this is the kind of industrial problem that duPont and a lot of the other corporations have had before.

MR. STUARD: That is right.

CHAIRMAN STEIN: I think an example here, and I want to make this clear, this isn't--I think duPont has probably done a very effective job here, but in other areas, for example you might take the St. Louis area, several plants are putting out phenols. Each industrial plant by itself may not be putting out enough phenols to create a severe pollution problem, but when you added them all together you did get a problem and all the plants were faced with the problem of meeting these phenols. This is always a continuing problem in dealing with an inorganic industrial waste.

MR. POSTON: Does your fixing bath contain any zinc or glucose?

MR. STUARD: No, sir.

CHAIRMAN STEIN: Thank you very much, sir.

MR. HOUSER: Mr. Chairman, I have three industries that are named in the report, all of which have septic tanks for domestic sewage for their employees and no process wastes of detrimental qualities, at least. Would you like to hear from them if they are present?

CHAIRMAN STEIN: Yes.

MR. HOUSER: Mr. DePue of the Maquoketa Company.

Is there anyone here from Dairypak, Inc.?

MR. MANNING: James Manning, Clinton Products Manufacturing of Dairypak Bluter, Inc.

As stated in his report, we are presently connected to a septic system and when the interceptor sewer is within reach of our plant we will plan to connect to it. Our facilities construction in 1960 were so made that it would be possible without too much expense. And as far as industrial wastes, there are none that would be detrimental to the system.

MR. HOUSER: Thank you.

Interstate Power Company. Is a representative here?

MR. WOLF: Mr. Chairman, Mr. Houser. I am J. C. Wolf, District Manager of the Interstate Power Company at Clinton.

We have installed a septic tank for our sewage from the employees at the plant. This was installed after the 1952 report. We conferred with Mr. Houser's department and the tank that we installed was approved by their department.

We have no other waste that goes into the river other than cooling water for our condensers at the power plant. I think we probably help the situation with that because we treat this water before it goes through the condensers and goes back into the river.

CHAIRMAN STEIN: Do you intend to hook up to that municipal system when it is constructed for the domestic wastes?

MR. WOLF: No; we are too far removed to do that.

MR. HOUSER: Thank you.

Is there anyone here from the Clinton Rendering Company?

I would now like to call on the City of LeClaire and the Aluminum Company of America, both of which are mentioned in the report as discharging sewage and wastes into the river. As I mentioned this morning, however, the Town of LeClaire I think was erroneously stated as discharging because there is no sewer system in use at the present time, and there is a sewage treatment plant under construction and ready for use as soon as the sewers are completed. This sewage treatment plant will consist of settling of the solids or what we normally call primary treatment,which meets the Joint Resolution in regard to the treatment that we think is adequate for the use of the water downstream.

Is the Honorable Louis V. Mohr or any representative of the Town of LeClaire here?

I will next call on Mr. A. A. Aerni, Aluminum Company of America.

MR. AERNI: My name is A. A. Aerni, Aluminum Company of America, and for Mr. Coffey's report, it is in Riverdale, Iowa, not Bettendorf. I am a Staff Engineer with the Aluminum Company of America and my duties are primarily concerned with the utilities for the operation of the plant, amongst which are the sewage treatment and industrial wastes.

We have one of each in operation. They have operated since the construction of the plant in 1947, and they were always included from the start in the plans of the construction of the plant.

These two plants, sewage treatment and industrial wastes, represent an outlay in capital of around three-quarters of a million dollars, which the company allotted to offset any pollution that might occur from these operations to the Mississippi River. The industrial waste treatment plant treats mainly soluble oil wastes, but may include greases and acids.

We are continually making a study of the operation of this industrial waste treatment plant for betterment, and we do anticipate a change in the near future. We rather pride ourselves, actually, management at Alcoa, in our treatment processes for keeping the contaminants that go into the river to a minimum to keep in the good graces of the public.

We also have installed or have used large quantities of cooling water from the river, and would like to say that if this pollution continues, as has been brought out here in this meeting, it will eventually affect our own operations.

In closing, we would like to state that our management is more than willing to cooperate with any pollution laws and to keep the contaminants from entering the Mississippi River.

CHAIRMAN STEIN: Thank you, sir.

Are there any questions or comments?

Would you care, if you could for the record, to indicate what kind of treatment you have for your sewage?

MR. AERNI: The sewage?

CHAIRMAN STEIN: Yes.

MR. AERNI: We have full treatment.

CHAIRMAN STEIN: Primary?

MR. AERNI: Primary and secondary.

CHAIRMAN STEIN: And secondary?

MR. AERNI: Yes.

CHAIRMAN STEIN: Thank you.

MR. HOUSER: Excuse me. You also have disinfection for protection of the Davenport water supply.

MR. AERNI: Yes.

CHAIRMAN STEIN: Primary, secondary, and chlorination?

MR. AERNI: Yes.

CHAIRMAN STEIN: This you have done on your own?

MR. AERNI: Yes.

CHAIRMAN STEIN: They have a permit from the state?

MR. HOUSER: Well, they had approval. At that time there wasn't any need for a permit.

CHAIRMAN STEIN: Approval?

MR. HOUSER: Yes.

CHAIRMAN STEIN: Thank you.

MR. HOUSER: Mr. Chairman, that concludes the list of municipalities and industries as were mentioned in the report.

I have a statement that I would like to read from the Izaak Walton League. This is a statement handed to me by Mr. Duane E. DeKoch, Executive Secretary, Iowa Division Izaak Walton League of America. Mr. DeKoch was unable to remain to present this statement personally, so he asked me to read it.

"The Izaak Walton League of America takes credit for organizing the first nation-wise anti-pollution campaign, in 1927. Since that date, the organization has found this battle against pollution to be one of its most important purposes for existence. The Iowa Division of the Izaak Walton League of America wants to take this opportunity to again voice its wholehearted support of the Iowa Department of Health and the U. S. Department of Health, Education and Welfare in their efforts to halt the pollution of the Mississippi as it borders Iowa. Every effort must be made to halt this misuse of one of our most important resources, water."

Signed Duane E. DeKoch.

CHAIRMAN STEIN: Thank you, Mr. Houser. Do you have any more?

MR. HOUSER: I would like to call now on Mr. C. V. Grooms, Corresponding Secretary of the Clinton County Chapter of the Izaak Walton League.

MR. GROOMS: Chairman Stein, ladies and gentlemen. This is just a brief letter. I hope you are not getting as lopsided sitting there as I have been.

This letter is addressed to the U. S. Public Health Service.

"Gentlemen: Reference is made to your meeting as of this date with the representatives of the water pollution control agencies of the States of Illinois and Iowa, and specifically to the meeting called for ten a.m. in the City of Clinton, Iowa, per the announcement of Secretary Ribicoff.

"For the past forty years the Izaak Walton League both on national and state levels has taken the position that the rivers and lakes belong to the total population.

"Since the League is strictly a conservation organization it has always taken the position that water is one of the basic natural resources of the U. S. A., or for that matter a basic natural resource of any country no matter where situated.

"The local Chapter of the National Association desires at this time to assure the Public Health Service that we extend our 100 percent support to any and all activities on your part to clean up the father of waters, namely, the Mississippi River."

That is signed C. V. Grooms, Corresponding Secretary.

I seem to be a professional substitute here today. I am now speaking for John W. Carlsen, who addressed his letter to the U. S. Public Health Service, and he says:

"Gentlemen: As Chairman of the Mississippi Basin Subcommittee, Clean Water Committee, Izaak Walton League of America, 408 Howes Building, Clinton, Iowa, I wish to express for myself and my committee our wholehearted support of your endeavors to clean up pollution in the Mississippi River and its tributatires.

"It is my firm belief that the general public is in favor of clear, clean water in Lakes and Rivers of our nation.

"Under these circumstances it is vital that the public be advised of the present conditions of pollution. Favorable publicity is essential.

"My committee wishes to commend the U. S. Department of Health, Education and Welfare and also corresponding departments in the State of Iowa and the State of Illinois in their efforts to clear up pollution."

Thank you.

CHAIRMAN STEIN: Are there any comments or questions?

Thank you very much.

MR. HOUSER: I believe there is one additional statement from the Izaak Walton League. Is Mr. Kroeger, Chairman of the Pollution Committee of the Davenport Chapter of the Izaak Walton League, present?

MR. KROEGER: Mr. Chairman, ladies and gentlemen.

The statement I am about to give is my own personal opinion and observation from a lifelong association with the Mississippi River. I am Adolph Kroeger, on the Health and Sanitation Committee of the Iowa Division. I am speaking for the 800 members of the Davenport Chapter.

If I repeat any of the statistics that have already been made, it is unintentional, but does tie in with the things that I have to say.

For the foreseeable future, the use of rivers and streams will continue to be the Nation's chief method of getting rid of the wastes of people and industries, and by putting to work the knowledge and engineering skills, plus purification facilities which are now available, water pollution can be controlled and the water we drink or use in the household is in many regards the best in the world. The immediate problem is adopting better industrial and agricultural practices and to create public awareness and public interest to keep the more dangerous pollution from ever reaching a watercourse, thereby eliminating the filth load from the treatment plants downstream.

Rivers and streams are no respecters of State boundaries, which poses some pollution abatement problems because of the many political jurisdictions involved. However, many States have banded together to clean up interstate rivers, as for example, the Ohio River Valley Sanitation Commission, which represents eight states bordering one of the Nation's largest, most commercialized and also the most polluted rivers, and made it again a river of living water, even in the face of the water being re-used a number of times before it empties into the Mississippi. In my humble opinion, an official pollution abatement and control board could shoulder the responsibilities and authority to regulate interstate streams in their pollution problems to gain objective benefits more readily than can several departments working with the best of cooperative efforts.

Polluted waters are not only a hazard to health and a disgrace to our people, they will affect our economy and threaten industries and agriculture, they will destroy natural beauty, kill fish and wildlife, and reduce the recreational facilities of the people. The Nation's outdoor recreation plant is built on or around the shores of the country's watercourses, in this area the Mississippi River, and the need for clean water for recreation continues to mount. In Scott County the fishermen and hunters have spent up to $68,000 this year for licenses to indulge their recreation; there are approximately two thousand pleasure craft using pools 14 and 15 from the Iowa side of the river, and many hundreds of skiers use these pools. Thousands of citizens of the county enjoy picnicking, swimming, beachcombing and birdwatching, or otherwise relaxing and enjoying the aesthetic pleasures along or on the river on weekends and vacations. The beforementioned amounts for licenses does not include the licenses purchased by deer hunters in the county, but for the State approximately 8,000 licenses were sold. These figures, representing only one county's income from expenditures for recreation, are impressive. When the national income, which totaled forty billion dollars last year, is considered it represents a good share of the total gross national product.

We don't think the Mississippi has any posters prohibiting swimming because the water is unsafe, but one look at the scum and garbage in the more quiet areas of the backwaters will quickly discourage that pastime. Aggressive action to clean up the Mississippi must be taken while it is still possible to do so. Failure to do this may rob the population of the Mississippi basin of a priceless heritage. Do we have anything to replace this recreation plant if it fails or can we afford to lose the annual income from the use of it? This is food for thought.

My own love and respect for this great river has intensified itself over the many years I have known it, but along with it has come another emotion, fear. Not fear of the river, but what may have been imposed upon it and is hidden in the muddy reflections in the wake of the propellers that churn the huge barges along its channel and whether we can get to it soon enough with enough to keep it the good friend of man and the servant it has always been.

CHAIRMAN STEIN: Thank you, sir. Any comments or questions?

MR. HOUSER: Are there any other agencies, organizations, or groups from Iowa that would like to present a statement at this time?

If not, Mr. Chairman, that concludes our presentation.

CHAIRMAN STEIN: Observing the group, I think we want to push through, but I think that some people may be getting a little logy. May I suggest that we stand up in our seats for about three minutes and we will get into the homestretch after that.

(RECESS)

CHAIRMAN STEIN: May we reconvene.

Mr. Klassen.

MR. KLASSEN: Mr. Hearing Officer, ladies and gentlemen. I am Clarence W. Klassen, Chief Sanitary Engineer for the Illinois Department of Public Health, and by virtue of that office I am also Technical Secretary of the Illinois State Sanitary Water Board. Inasmuch as this is a conference and is part of a potential enforcement action involving an alleged interstate situation to which Illinois could be a party, I desire to place this statement in the record.

I want to emphasize that I am not stating that the wastes from the Clinton, Iowa, area are not now affecting Illinois. On the other hand, we recognize that these wastes may be affecting Illinois, but we do not have nor have facts been presented up to now which in our opinion we consider valid to prove such a detrimental effect.

CHAIRMAN STEIN: Any comments or questions?

MR. HOUSER: I have none.

CHAIRMAN STEIN: Do you have any people to call on?

MR. KLASSEN: We have no people to call on. I believe there are some people here from Illinois who came and may want to make a statement. I don't know.

CHAIRMAN STEIN: Yes.

MR. SWARTZ: I am H. E. Swartz, President of the Moline Conservation Club, Moline, Illinois.

The last day of August in 1960 my son and my wife and I took a canoe trip around Beaver Island and I thought I was going to show him a nice sight-seeing tour of a wilderness, but when we got around to the Beaver Slough section I thought I was in the hell hole of creation. I run the canoe into it and I found out I was in something just blacker than all get out, and I guess it was the corn processing plant that was ejecting this carbon into the river. My son is thirteen years old. I hope he grows up to be a hundred and I hope he can see the river clean again. I am drinking the water also. I live in East Moline. And I want to put in a little gripe for commercial fishermen. I would like to ask the gentleman from the corn processing plant a question.

The commercial fishermen down there have to beat the gunk, as the U. S. Surgeon General calls it, off of their nets, and I just wonder if carbon hardens under water.

MR. JURGENSEN: Excuse me, what was your question?

MR. SWARTZ: I would like to know if carbon could harden under water?

MR. JURGENSEN: Harden under water? No, powdered vegetable carbon is a material that is used to treat water for removing odors and tastes, and so forth, and this is precisely the same carbon that is used in our process for purifying syrups and sugars, so it absolutely does not harden under water. It remains in a fine powdered state.

MR. SWARTZ: Thank you.

CHAIRMAN STEIN: Mr. Swartz, as I understand it, the material which collects on the fishermen's nets is a slime growth called Sphaerotilus, and because of certain sugars and other material put into the water which act as a nutrient, Sphaerotilus is naturally present in small quantities and requires food to proliferate and once it does it spreads out and gathers on the nets. I think that possibly was the basis of some of the material in the department's report.

Does anyone else want to say something or have a statement to make that we haven't covered yet?

If not, we may get into a discussion here and try to summarize this. I think there is obviously one question in the back of several people's minds that there are two states involved here, and the first problem we have is that we had pretty much of an outline of the Iowa State program. Can we say just to start this discussion that Illinois has a commensurate program on the river or intends a commensurate program?

MR. KLASSEN: Without casting any reflection on Iowa, I don't know as we want to say a commensurate program. I would say we have a very effective and vigorous program in Illinois. And I believe that is commensurate with Iowa. (Laughter)

CHAIRMAN STEIN: All right.

Now, the next question we--

MR. HOUSER: Mr. Klassen, nevertheless there is sewage discharged from the Illinois side, is that correct?

MR. KLASSEN: That is correct. Just like in Iowa.

CHAIRMAN STEIN: We will get to this. You know, at another conference one of the state officials said to another one when we got to this stage that the difficulty with this is like two prostitutes in the parlor arguing which one is more respectable. (Laughter)

MR. KLASSEN: For the purpose of the record, I want to voice an objection.

CHAIRMAN STEIN: But I think the point is that both of these states which have worked in concert will have, it is to be expected, effective programs to abate pollution of this stretch of the river.

Now, the next point we get to, and I think this is in the back of everyone's mind, is the extent of treatment. I think we have had a very good example of the varying attitudes toward treatment in the statements made here today. On one side we have had the statement of the man from Alcoa where they have primary and secondary treatment and disinfection. In other words, what they evidently set out to do was to provide the maximum reasonable treatment they knew how to provide and to try to see how clean their effluent would be and innocuous it would be before they discharged it into the river, and not to see what the river could bear and they could get by with and provide the minimum. And, of course, on the other side, you run the entire spectrum, although here I think we have a situation where most people or most of the parties want to cooperate.

I think the question we come to is the degree of treatment necessary. This, generally speaking, although from time to time it does become a subject of the conference, is a matter that the states will work out in the permit arrangements with the individual dischargers. I think in this case, though, we have a situation here where we are thinking in terms of protecting the water quality not only for the people of Iowa but also for the people of Illinois, and both of these groups will have to be satisfied with the water quality in the stretch of the river. In addition, as I pointed out at the beginning of this conference, the Federal Government also has an obligation here, and for the treatment to be adequate it will have to be such that it will not endanger the health or welfare of persons in a state other than that in which the discharge originates.

These things will have to be borne in mind. We have every confidence in the Iowa and the Illinois programs, both on the basis of their past record and my personally working with them through the years, that in the issuance of the permits and the development of their state programs they will accomplish much.

I think with that, we will try to summarize the Conference. I think we might say that on the basis of the surveys, investigations, and reports that it is at least the belief of the Conferees representing the Federal Government that pollution subject to abatement under the Federal Water Pollution Control Act exists, and we recognize at this point the reservation of the Conferee from the State of Illinois where he says that such pollution may exist but on the basis of the present presentation of data he is not prepared to say at the present time it does exist. This pollution interferes with uses of water for water supplies, both public and industrial water supplies, commercial and sport fishing, recreational uses of the water, and interferes with the aesthetic and passive enjoyment of the river, of the Mississippi River in the Clinton-Quad Cities area.

We recognize also that the question of adequacy of the measures to treat pollution has yet to be tested. We believe that the Iowa program setting up the time schedules of December 20 and 21, 1961, are reasonable approaches to the problem and that these schedules should be adhered to and that the Conferees will adopt these time schedules as its time schedule. We recognize that the nature of delays here have been that up to this time the necessary treatment works and remedial facilities have not been installed, but we also want to take cognizance of the program of the State of Iowa in dealing with this problem and of the cooperative attitude expressed here today unanimously by the municipalities and industries involved and the Federal installations. I am sure with a spirit of that kind, if we can continue with this program we will go a long way toward cleaning up the river.

What we would like to suggest as a part of the summary, that the Department of Health, Education and Welfare at six-month intervals will prepare progress reports, which we will make available to the states and others, to see how well the program for the abatement of pollution is developing in this area. This will not only include the progress made by the Iowa communities in compliance with the orders and the other parties of the Iowa program, but will include the progress made and the activities of the Illinois authorities. The Department of Health, Education and Welfare stands ready in a technical way at the request of the Illinois and the Iowa authorities to work with them in a cooperative way and to give them any assistance that we can offer within our resources to help them with this problem.

Are there any modifications, questions or suggestions, first from the Conferees?

MR. HOUSER: I would just like to clarify one point, Mr. Stein. Do I understand that you will require from the industries and cities on the Iowa side a progress report or it will be required from the State of Iowa?

CHAIRMAN STEIN: The State of Iowa. I heard your program, and this is why I didn't want to place any of this in your requirements. I think we will as the Public Health Service prepare a progress report every six months. What we will do, we will get in touch with Mr. Klassen's group in Illinois and your group, check on the progress being made, put that together and make that available to you here, all the interested people, and the people back in Washington who are interested in the progress of the case.

It seems to me that on the basis of the cooperative program that you have outlined here, if that is adhered to this should be pretty satisfactory.

MR. KLASSEN: Since this question of the progress report came up, I feel that it is necessary that I put in the record that we are requesting specifically that the Public Health Service re-evaluate some of its conclusions in this report if they are going to serve as a basis for a progress report, particularly two. One conclusion is that the bacterial loadings are in excess of recognized limits permitted for use by the State of Illinois. This is not correct. I am requesting that you re-review our standards, make a correct interpretation and a correct quote from those standards. They were misquoted.

One other point: That the extensive use of this stretch of the river for recreation would be debased. This is your conclusion on the basis of criteria recognized by Illinois. I am specifically requesting that you re-review our rules and regulations for recreation camps, from which you quoted incorrectly. We have a definite statement in there that we do not approve of a river for swimming. They were misinterpreted.

I request that these be re-evaluated if they are going to be used in the progress report.

CHAIRMAN STEIN: Mr. Klassen, I think the summary we made covered the points that this was a report of our investigators.

I would say for us that we will get our technical staffs together, and I am sure on the basis of developing a technical committee and a technical staff we can get the departments of both states to agree on a technical report. This will be available.

I don't know that there is any purpose in going into whether the rivers are fit for swimming at this point. This is largely a technical point which we will go into. All I can say is that people do swim in the river.

MR. POSTON: It is my understanding that the facts that you have outlined here would be followed through and that the technical report would not be utilized specifically in future progress. Progress concerns construction, planning, voting of bonds, and this.

CHAIRMAN STEIN: This is, I think also, though, a technical base must be the place we start from for an evaluation of the program, and I think this evaluation from the technical base will be made. However, the technical base will be reworked and re-evaluated by both states and us, and I am sure that these problems are the kind of problems that, Mr. Klassen, we have had before and inevitably have when you get scientific investigators working on a problem, and I don't see any great moment in ironing out or working out the plane of discrepancies of thought or interpretation we have now and being able to have a base document completely agreed to by both states and the Public Health Service.

MR. KLASSEN: Yes, I think that is possible, and we certainly would encourage that.

MR. POSTON: We would be very happy to do that.

CHAIRMAN STEIN: Are there any other further statements or comments or does anyone from the floor want to say anything?

If not, first I think we have had a very encouraging conference here today. I think that with the cooperative spirit displayed here by all parties concerned, local, state, Federal, industrial, that a definite way is being shown toward a progress in abating pollution and cleaning up the river. I think that we all have to recognize that the key to any effective pollution control rests with the pretty strict adherence to an agreed-upon reasonable time table, and I think we have that here.

With that, I would like to thank you all for coming and bearing with us and participating in this conference. We stand adjourned. Thank you very much.

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REPORTER'S CERTIFICATE

I, Virginia Hough Rankin, do hereby certify that I was present at the time and place first hereinbefore set forth, the aforementioned parties appearing, that I took down in shorthand the entire proceedings had at said time and place, afterwards transcribed said shorthand notes, and that the foregoing 86 pages constitute a true, correct, and complete transcript of my said shorthand notes.

Virginia Hough Rankin

Virginia Hough Rankin

APPENDIX A

HISTORICAL ABSTRACT OF WATER POLLUTION, CLINTON - QUAD CITIES REACH, MISSISSIPPI RIVER, 1943-1961.

May, 1943	Commercial fishermen complain of wastes fouling nets from Clinton to Davenport.
1944-1945	Fish and Wildlife Survey - "showed pollution limited largely to local areas below cities and industrialized areas. However, would not admit that pollution was great enough to cause harm to present fish fauna, but cautioned that the safety margin was narrowed."
1944-1946	Technical Committee of the Upper Mississippi conducted field study of fishery resources from Dubuque, Iowa, to Caruthersville, Missouri. At Cordova, Illinois, commercial fishermen complained of sliming of hoop nets--attributed to waste discharge from Clinton, Iowa, area 15 miles upstream, however, no apparent effect on fish.
1951	Iowa law changed to include Mississippi River in pollution control jurisdiction.
1951	City of Clinton Engineer's office prepared preliminary study of interceptor problem and location of STP. New pumping stations installed in 1952 fit into such an interceptor system.

APPENDIX A (CONTINUED)

1952	Mississippi River floods major portion of tributary areas of certain sewers. Corps of Engineers installed pump stations since construction of Lock and Dam 14 at Le Claire, Iowa. The pool formed was responsible for back up and pump stations installed to alleviate same. However, has not entirely relieved situation. Health hazard exists due to back up into basements.
March, 1952	Upper Mississippi Conference on Water Pollution. Agreement among Iowa, Illinois and Wisconsin, pollution control groups on abatement program. Requires minimum primary treatment for all municipalities and industries with elimination of toxic substances to harmless level. More sophisticated treatment if conditions warrant. City of Clinton representatives attended this conference.
June 2, 1952	Petition by Clinton County Chapter of Izaak Walton League to investigate pollution of Mississippi River below Clinton.
July, 1954	Report on the Water Pollution Investigation of the Mississippi River and its tributaries in and below Clinton, Iowa, by the Iowa State Department of Health.
1955	State of Iowa restricts sewer extensions contingent upon providing intercepting sewers and treatment plant.
1957	Consoer, Townsend and Associates, Consulting Engineers hired by City of Clinton to prepare preliminary engineering report.

APPENDIX A (CONTINUED)

1958	Engineering report submitted calling for total expenditure of $6,000,000 for storm sewer, trunk sewer, interceptor sewer, and treatment plant construction. Recommended plant cost estimated at $1,125,000, interceptor sewers at $2,760,000, trunk sanitary sewers at $585,000 and storm water relief facilities at $1,175,000. Per capita costs based on design population of 45,000 for plant alone would be $23.40; for interceptor and plant together at total cost of $3,885,000 would be $86.50; total per capita costs for entire project ($6,000,000) based on design population would be $133.00.
March, 1960	Meeting of U. S. Public Health Service representatives, State of Iowa and Clinton officials. Tentative time schedule set up for financing arrangements to be completed within 90 days of the meeting.
To date-1961	No action by City to implement program, although it is reported that the Corn Products Plant had substantially reduced its industrial waste load discharge. (According to news report by Mayor Ball, industry in Clinton area reduced load from 500,000 PE to 180,000 PE by August, 1960).
1960-1961	Illinois communities of Fulton (pop. 3,388) and and Albany (pop. 550) and Le Claire, Iowa (pop. 1,546) start construction of sewage collection and treatment facilities. Per capita costs for Fulton on basis of design population of 4,500 are estimated at $33.00 for the primary plant and $74.00 for the total project. Albany with a design population of 750 has an estimated per capita cost of $96.00 for an extended aeration plant and $361.00 for the total project.

APPENDIX A (CONTINUED)

October, 1961	Industrial waste survey made by Hayse H. Black at the Corn Products Plant for State of Iowa.
1961	Coliform counts per 100 ml. (monthly average and maximum) for the downstream communities of East Moline, Moline, Rock Island and Davenport are as follows according to data furnished by water plant management:

APPENDIX A (CONTINUED)

		Coliform Count MPN/100 ml.	
Rock Island Water Works	**Month & Year**	**Average**	**Maximum**
(Intake at Illinois-Iowa line)	January 1961	2,606	11,000
	February 1961	2,900	11,000
	March 1961	2,080	7,200
	April 1961	1,330	11,000
	May 1961	626	6,900
	June 1961	1,240	7,300
	July 1961	1,279	2,400
	August 1961	985	6,900
	September 1961	3,867	14,000
Moline Water Works			
	March 1961	20,270	70,000
	April 1961	16,179	70,000
	May 1961	28,577	70,000
	June 1961	47,670	70,000
	July 1961	46,748	70,000
	Oct.23-27 1961	60,800	70,000
East Moline Water Works			
	February 1961	5,863	24,000
	March 1961	7,877	24,000
	April 1961	2,700	6,200
	May 1961	3,567	24,000
	June 1961	18,000	70,000
	July 1961	32,000	70,000
	August 1961	23,800	70,000
	September 1961	47,000	70,000+
	Oct.23-27 1961	30,300	79,000
Davenport, Iowa Water Works			
	1961 Week Ending		
	July 1	2,014	2,500
	" 8	1,400	1,900
	" 15	2,029	4,800
	" 22	1,470	2,500
	" 29	4,100	9,400
	August 5	4,300	12,000
	" 12	6,140	12,000
	" 19	2,414	3,500
	" 26	1,957	3,000
	September 2	2,700	4,200
	" 9	2,929	8,000
	" 16	27,814	100,000

APPENDIX A (CONTINUED)

October 26, 1961 --- State of Iowa, Department of Public Health cites the cities of Clinton and Camanche, Iowa and six industrial plants for pollution of Mississippi River in hearing at Des Moines, Iowa.

December 4, 1961 --- Clinton City Council authorizes Consoer, Townsend and Associates, Chicago consulting engineers, to proceed with preparation of plans, specifications and estimates for construction of primary sewage treatment plant and intercepting sewers.

APPENDIX B

Tabulation
of
Stream Flows and Laboratory Data

Date	Station Number	Stream Mile	(1) River Disch. cfs	Water Temp. °C.	Dissolved Oxygen ppm	Percent D.O. satur.	MPN per 100 ml	E. Coli per 100 ml	Remarks
			x1000						
1961	**Mississippi River**								
10-23	#1 L	521.6	26.2	10.5	9.69	86.5	7900	3300	East Channel
24			24.7	10	9.80	86.7	24000	13000	
25			25.4	10	10.10	89.3	2300	2300	
26			25.8	9	10.40	89.6	4900	1300	
27			24.3	9	10.78	92.9	4900	3300	
28			23.4	9	10.62	91.6	17200	3300	
29			26.2	10	10.50	92.9	7900	4900	
30			48.0	10	10.59	93.7	10900	4900	
31			51.1	10	10.00	88.5	17200	7900	
	Section Mean Values								
		Oct. 23-29		9.5	10.23	89.3	6740	3600	
		Oct. 23-31		9.6	10.21	89.5	9300	4580	
10-23	#1 C	521.6	26.2	10.5	9.65	86.1	7900	3300	Center Channel
24			24.7	10	9.71	85.9	10900	10900	
25			25.9	10	10.00	88.5	2300	2300	
26			25.8	8	10.36	87.1	4900	1300	
27			24.3	9	10.73	92.5	3300	1700	
28			23.4	9	10.46	90.2	10900	3100	
29			26.2	10	10.49	92.8	3300	1700	
30			48.0	10	10.54	93.3	10900	7000	
31			51.1	10	9.59	84.9	33000	17200	

(1) Preliminary figures, subject to revision.

APPENDIX B (CONTINUED)

Tabulation
of
Stream Flows and Laboratory Data

Date	Station Number	Stream Mile	River Disch. cfs	Water Temp. °C	Dissolved Oxygen ppm	Percent D.O. satur.	MPN per 100 ml	E.Coli per 100 ml	Remarks
			x1000						
1961									
10-23	#1 R	521.6	26.2	10.5	9.56	85.4	4900	2400	West Channel
24			24.7	10	9.79	86.6	7900	4900	
25			25.4	10	9.91	87.7	4900	3300	
26			25.8	8	10.40	87.4	3300	2300	
27			24.3	9	10.77	92.8	2300	2300	
28			23.4	9	10.47	90.3	2300	1300	
29			26.2	10	10.55	93.4	3300	3300	
30			48.0	10	10.47	92.6	13000	3300	
31			51.1	10	9.90	87.6	24000	7900	
10-23	#2	100 yds below head		11	9.51	86	13000	3300	Beaver Slough
24				10	9.90	88	13000	3300	
25				10	10.17	90	13000	3300	
26				9	10.20	88	24000	7000	
27				9	10.90	94	13000	2300	
28				9	10.47	90	33000	13000	
29				10	10.49	93	33000	4600	
30				11	10.41	94	4900	1300	
31				10	9.85	87	33000	7000	
	Oct. 23-29 mean			9.7	10.23	90	20300	5257	
	Oct. 23-31 mean			9.9	10.21	90	20000	5000	

APPENDIX B (CONTINUED)

Tabulation
of
Stream Flows and Laboratory Data

Date	Station Number	Stream Mile	River Disch. cfs	Water Temp. °C	Dissolved Oxygen ppm	Percent D.O. satur.	MPN per 100 ml	E.Coli per 100 ml	Remarks
			x1000						
1961									
10-23	#3	1-1/4		11	9.45	85	17200	7900	Beaver Slough
24		below		10	9.98	88	7000	3300	
25		N.end		10	10.20	90	17200	7000	
26		N.side		9	10.30	89	49000	7000	
27		Clinton		9	11.06	95	9400	2300	
28		Corn Co.		9	10.47	90	17200	7900	
29		property		10	10.57	94	49000	10900	
30				11	10.52	95	17200	1700	
31				10	9.90	87	24000	4900	
	Oct. 23-29 mean			9.7	10.29	90	23700	5485	
	Oct. 23-31 mean			9.9	10.27	90	23000	5000	
10-23	#4	2.8		11	9.54	86	79000	13000	Beaver Slough
24		below		10	9.99	88	7900	7900	
25		N.end		10	10.25	91	6300	6300	
26		at Mill		10	10.17	90	10900	10900	
27		Creek		9	11.10	96	7900	2200	
28		confluence		9	10.39	90	240000	49000	
29				10	10.51	93	21000	2000	
30				11	10.57	95	22100	3300	
31				10	9.96	88	24000	7900	
	Oct. 23-29 mean			9.9	10.28	90.6	53300	13040	
	Oct. 23-31 mean			10	10.27	90.8	46600	11400	

APPENDIX B (CONTINUED)

Tabulation
of
Stream Flows and Laboratory Data

Date	Station Number	Stream mile	River Disch. cfs	Water Temp. °C	Dissolved Oxygen ppm	Percent D.O. satur.	MPN per 100 ml	E.Coli per 100 ml	Remarks
			x1000						
1961									
10-23	#5	100 yds.		11	9.41	85	172000	7900	Beaver Slough
24		above		10	9.88	87	33000	7900	
25		mouth		10	10.00	88	141000	10900	
26				10	9.73	86	8000	5000	
27				9.5	10.78	95	17200	10900	
28				10	10.27	91	49000	7900	
29				10	10.60	94	23000	5000	
30				11	10.60	95	24000	7900	
31				10	10.02	89	49000	7000	
	Oct. 23-29 mean			10	10.01	89.4	63300	7930	
	Oct. 23-31 mean			10.2	10.14	90	57400	6700	
	Mississippi River								
10-23	#6 L	512.5	26.2	11	9.68	87.2	3300	2300	East Channel
24			24.7	10	9.84	87.1	7900	7900	
25			25.4	10	10.27	90.9	3300	2300	
26			25.8	10	10.28	91.0	3300	2300	
27			24.3	9	10.90	94.0	3300	3300	
28			23.4	9	10.68	92.1	13000	2300	
29			26.2	10	10.66	94.3	3300	3300	
30			48.0	10	10.75	95.1	10900	3300	
31			51.1	10	10.18	90.1	22100	7900	

APPENDIX B (CONTINUED)

Tabulation
of
Stream Flows and Laboratory Data

Date	Station Number	Stream Mile	River Disch. cfs	Water Temp. °C	Dissolved Oxygen ppm	Percent D.O. satur.	MPN per 100 ml	E.Coli per 100 ml	Remarks
			x1000						
1961									
10-23	#6 C	512.5	26.2	11	9.53	85.8	4900	2300	Center Channel
24			24.7	10	9.90	87.6	7000	3300	
25			25.4	10	10.30	91.2	4900	3300	
26			25.8	10	10.29	91.1	24000	13000	
27			24.3	9	11.00	94.8	7000	1700	
28			23.4	9	10.52	90.7	17200	7000	
29			26.2	10	10.60	93.8	4900	800	
30			48.0	10	10.65	94.2	24000	13000	
31			51.1	10	9.96	88.1	33000	7900	
10-23	#6 R	512.5	26.2	11	9.45	85.1	22100	4900	West Channel
24			24.7	10	9.75	86.3	24000	4900	
25			25.4	10	10.25	90.7	10900	3300	
26			25.8	10	10.11	89.5	22100	8000	
27			24.3	9	10.60	91.4	33000	7000	
28			23.4	10	10.03	88.8	79000	13000	
29			26.2	10	10.20	90.3	79000	7900	
30			48.0	11	10.24	92.3	33000	13000	
31			51.1	10	9.79	86.6	24000	2300	
	Section Mean Values								
	Oct. 23-29			9.9	10.23	90.0	18000	5030	
	Oct. 23-31			10.0	10.24	90.4	19400	5700	

APPENDIX B (CONTINUED)

Tabulation
of
Stream Flows and Laboratory Data

Date	Station Number	Stream Mile	River Disch. cfs	Water Temp. °C	Dissolved Oxygen ppm	Percent D.O. satur.	MPN per 100 ml	E.Coli per 100 ml	Remarks
			x1000						
	Mississippi River								
1961									
10-23	#7 L	507.1	26.2	11	9.37	84.4	3300	3300	East Channel
24			24.7	10	9.65	85.4	17200	1700	
25			25.4	10	9.92	87.8	4900	3300	
26			25.8	10	10.11	89.5	7900	2300	
27			24.3	8	10.62	89.2	7900	3300	
28			23.4	9	10.50	90.5	4900	3300	
29			26.2	10	10.56	93.4	4900	-	
30			48.0	10	10.70	94.7	7900	1700	
31			51.1	10	10.31	91.2	24000	3300	
			x1000						
1961									
10-23	#7 C	507.1	26.2	11	9.60	86.5	7000	3300	Center Channel
24			24.7	10	9.75	86.3	1700	3300	
25			25.4	10	9.98	88.3	4900	3300	
26			25.8	10	10.02	88.7	3300	2300	
27			24.3	9	10.28	88.6	3300	2300	
28			23.4	9	10.43	89.9	13000	2300	
29			26.2	10	10.54	93.3	missing	7900	
30			48.0	10	10.60	93.8	7900	3300	
31			51.1	10	10.19	90.2	4900	2900	

APPENDIX B (CONTINUED)

Tabulation
of
Stream Flows and Laboratory Data

Date	Station Number	Stream Mile	River Disch. cfs	Water Temp. °C	Dissolved Oxygen ppm	Percent D.O. satur.	MPN per 100 ml	E.Coli per 100 ml	Remarks
1961			x1000						
10-23	#7 R	507.1	26.2	11	9.40	84.7	10900	2200	West Channel
24			24.7	10	9.70	85.8	13000	3300	
25			25.4	10	10.01	88.6	13000	3300	
26			25.8	10	10.05	88.9	3300	2300	
27			24.3	8	10.79	90.7	4900	2300	
28			23.4	9	10.38	89.5	7000	2300	
29			26.2	10	10.44	92.4	7900	7900	
30			48.0	10	10.60	93.8	9400	3300	
31			51.1	10	10.01	88.6	27800	7900	
	Section Mean Values								
	Oct. 23-29			9.8	10.10	88.7	7200	3700	
	Oct. 23-31			9.8	10.17	89.3	8700	3600	
			x1000						
10-23	#7 A		2.3	10.5	9.89	88	7900	790	Wapsipinicon R.
24			2.1	10.5	9.78	87	34800	7000	
25			2.0	10.5	9.91	88	26000	7000	
26			1.9	9	10.49	90	24000	2300	
27			1.8	8.5	10.81	92	3300	200	
28			1.8	9.5	10.50	92	24000	3300	
29			1.8	12	9.55	88	172000	33000	
30			1.8	13.5	8.60	82	348000	49000	
31			1.9	12	8.95	83	172000	22100	
	Oct. 23-29 mean			10	10.13	89.6	41700	7660	
	Oct. 23-31 mean			10.7	9.83	87.8	90200	13800	

APPENDIX B (CONTINUED)

Tabulation
of
Stream Flows and Laboratory Data

Date	Station Number	Stream Mile cfs	River Disch. cfs	Water Temp. °C	Dissolved Oxygen ppm	Percent D.O. satur.	MPN per 100 ml	E.Coli per 100 ml	Remarks
			x1000						
	Mississippi River								
1961									
10-23	#8 L	501.0	28.4	11	8.90	80.2	24000	3300	East Channel
24			26.8	10	9.44	83.5	4600	1300	
25			27.4	10	9.91	87.7	4900	3300	
26			27.7	10	10.34	91.5	3300	1300	
27			26.1	9	10.30	88.8	7000	700	
28			25.2	9	10.50	90.5	7900	1400	
29			28.0	-	-		-	-	
30			49.8	10	10.36	91.7	24000	4900	
31			53.0	10	10.38	91.8	24000	3300	
10-23	#8 C	501.0	28.4	11	9.81	88.4	3300	2300	Center Channel
24			26.8	10	9.35	82.7	7900	7900	
25			27.4	10	9.91	87.7	4900	2200	
26			27.7	10	10.10	89.4	7900	1700	
27			26.1	9	10.28	88.6	3300	2300	
28			25.2	9	10.65	91.8	3300	1300	
29			28.0	-	-		-	-	
30			49.8	10	10.34	91.5	7900	4900	
31			53.0	10	10.21	90.4	33000	2300	

APPENDIX B (CONTINUED)

Tabulation
of
Stream Flows and Laboratory Data

Date	Station Number	Stream Mile	River Disch. cfs	Water Temp. °C	Dissolved Oxygen ppm	Percent D.O. satur.	MPN per 100 ml	E.Coli per 100 ml	Remarks
			x1000						
1961									
10-23	#8 R	501.0	28.4	11	9.10	82.0	3300	1300	West Channel
24			26.8	10	9.30	82.1	17200	1700	
25			27.4	10	9.55	84.5	17200	77000	
26			27.7	10	9.83	87.0	13000	4900	
27			26.1	9	10.10	87.1	7900	3300	
28			25.2	9	10.54	90.9	7900	2200	
29			28.0	-	-	-	-	-	
30			49.8	11	9.54	85.9	33000	7900	
31			53.0	10	9.80	86.7	13000	2300	
	Section Mean Values								
	Oct. 23-29			9.8	9.88	87.0	8300	2670	
	Oct. 23-31			9.9	9.94	87.6	11800	3070	
	Mississippi River								
1961									
10-23	#9 L	492.5	28.4	12	8.76	81.1	4600	2300	East Channel
24			26.8	12	9.19	85.1	7900	2300	
25			27.4	11.5	9.39	85.7	17200	4900	
26			27.7	-	-	-	13000	4900	
27			26.1	10	9.97	88.2	4900	1700	
28			25.2	10	10.60	93.8	4900	2300	
29			28.0	-	-	-	-	-	
30			49.8	11	10.30	92.8	33000	2300	
31			53.0	11	10.13	91.3	49000	4900	

APPENDIX B (CONTINUED)

Tabulation
of
Stream Flows and Laboratory Data

Date	Station Number	Stream Mile	River Disch. cfs	Water Temp. °C	Dissolved Oxygen ppm	Percent D.O. satur.	MPN per 100 ml	E.Coli per 100 ml	Remarks
			x1000						
	Mississippi River								
1961									
10-23	#9 C	492.5	28.4	12	9.05	83.8	24000	1700	Center Channel
24			26.8	12	8.94	82.8	22100	2200	
25			27.4	12	9.45	87.5	4900	3300	
26			27.7	10	9.61	85.0	14100	4600	
27			26.1	10	9.76	86.4	13000	4900	
28			25.2	10	10.46	92.6	3300	2300	
29			28.0	-	-	-	-	-	
30			49.8	11	9.98	89.9	46000	2300	
31			53.0	11.5	9.93	90.7	12000	4900	
10-23	#9 R	492.5	28.4	11	9.01	81.2	9400	2600	West Channel
24			26.8	12	8.89	82.3	13000	3300	
25			27.4	12	9.20	85.2	22100	4900	
26			27.7	10.5	9.30	83.0	14100	4900	
27			26.1	10	9.60	84.9	33000	3300	
28			25.2	10	10.39	91.9	13000	7900	
29			28.0	-	-	-	-	-	
30			49.8	11	9.95	89.6	130000	7000	
31			53.0	11.5	9.71	88.7	-	-	
	Section Mean Values								
	Oct. 23-29			11.0	9.51	85.9	13250	3570	
	Oct. 23-29			11.0	9.64	87.1	22100	3800	

APPENDIX B (CONTINUED)

Tabulation
of
Stream Flows and Laboratory Data

Date	Station Number	Stream Mile	River Disch. cfs	Water Temp. °C	Dissolved Oxygen ppm	Percent D.O. satur.	MPN per 100 ml	E. Coli per 100 ml	Remarks
			x1000						
	Mississippi River								
1961									
10-23	#10 L	489.0	28.4	12	9.09	84.2	11000	5000	East Channel
24			26.8	12	9.17	84.9	33000	2300	
25			27.4	11.5	9.55	87.2	10900	2200	
26			27.7	10.5	9.80	87.5	4600	1700	
27			26.1	10.5	9.92	88.6	3300	1300	
28			25.2	10	10.43	92.3	4600	1300	
29			28.0	-	-	-	-	-	
30			49.8	11	10.19	91.8	13000	4900	
31			53.0	11	10.28	92.6	7900	2300	
10-23	#10 C	489.0	28.4	12	9.07	84.0	17000	5000	Center Channel
24			26.8	12	9.03	83.6	7000	800	
25			27.4	11.5	9.50	86.7	4900	2300	
26			27.7	10	9.71	85.9	17200	2300	
27			26.1	10.5	9.83	87.8	24000	3300	
28			25.2	10	10.39	91.9	2300	1300	
29			28.0	-	-		-	-	
30			49.8	11	10.20	91.9	17200	4900	
31			53.0	11	10.02	90.3	14100	6300	

APPENDIX B (CONTINUED)

Tabulation
of
Stream Flows and Laboratory Data

Date	Station Number	Stream Mile	River Disch. cfs	Water Temp. °C	Dissolved Oxygen ppm	Percent D.O. satur.	MPN per 100 ml	E. Coli per 100 ml	Remarks
			x1000						
1961									
10-23	#10 R	489.0	28.4	11.5	8.66	79.1	17000	2000	West Channel
24			26.8	12	8.80	81.5	24000	2200	
25			27.4	11.5	9.44	86.2	13000	2300	
26			27.7	10	9.51	84.1	13000	2300	
27			26.1	10.5	9.50	84.8	10900	1300	
28			25.2	10	10.39	91.9	7000	500	
29			28.0	-	-		-	-	
30			49.8	11	9.97	89.8	3100	2300	
31			53.0	11.5	9.74	88.9	130000	7000	
	Section Mean Values								
	Oct. 23-29			11.0	9.54	86.2	12500	2190	
	Oct. 23-31			11.0	9.67	87.4	17100	2800	
10-23	#11	488.5	28.4				79000	13000	East Moline Water Works Intake
24			26.8				49000	17000	
25			27.4				70000	5000	
26			27.7				3300	3300	
27			26.1				13000	8000	
28			25.2				33000	8000	
29			28.0				-	-	
30			49.8				33000	8000	
31			53.0				17000	2000	
	Oct. 23-29 mean						41200	9050	
	Oct. 23-31 mean						37[illegible]00	8000	

APPENDIX B (CONTINUED)

Tabulation
of
Stream Flows and Laboratory Data

Date	Station Number	Stream Mile	River Disch. cfs	Water Temp. °C	Dissolved Oxygen ppm	Percent D.O. satur.	MPN per 100 ml	E.Coli per 100 ml	Remarks
			x1000						
	Mississippi River								
1961									
10-23	#12	486.0±	28.4				33000	5000	Moline
24			26.8				49000	8000	WaterWorks
25			27.4				33000	7000	Intake
26			27.7				70000	11000	
27			26.1				49000	22000	
28			25.2				33000	8000	
29			28.0				33000	5000	
30			49.8				130000	49000	
31			53.0				17000	5000	
	Oct. 23-29 mean						38100	9400	
	Oct. 23-31 mean						51800	13300	
10-23	#13	484.5	28.4				33000	2000	Davenport
24			26.8				13000	5000	Water 'Company
25			27.4				7900	4900	Intake
26			27.7				17200	2300	
27			26.1				13000	3300	
28			25.2				33000	3300	
29			28.0				79000	7000	
30			49.8				22100	7900	
31			53.0				46000	7900	
	Oct. 23-29 mean						28000	3970	
	Oct. 23-31 mean						33800	4800	

APPENDIX B (CONTINUED)

Tabulation
of
Stream Flows and Laboratory Data

Date	Station Number	Stream Mile	River Disch. cfs	Water Temp. °C	Dissolved Oxygen ppm	Percent D.O. satur.	MPN per 100 ml	E.Coli per 100 ml	Remarks
			x1000						
	Mississippi River								
1961									
10-23	#14 L	483.5	28.4	12	9.01	83.4	6000	4000	East Channel
24			26.8	12	8.90	82.4	7900	1300	
25			27.4	12	9.29	86.0	3300	3300	
26			27.7	10	9.69	85.7	14100	1100	
27			26.1	10.5	9.60	85.7	7900	3300	
28			25.2	10	10.10	89.4	3300	500	
29			28.0	10	10.27	90.9	4900	1300	
30			49.8	10.5	10.10	90.2	7000	3300	
31			53.0	11	10.09	90.9	4600	2300	
10-23	#14 C	483.5	28.4	12	9.10	84.3	13000	2000	Center Channel
24			26.8	12	8.99	83.2	7900	3300	
25			27.4	12	9.15	84.7	4900	1100	
26			27.7	11	9.72	90.0	4900	1700	
27			26.1	10.5	9.58	85.5	13000	3300	
28			25.2	10	10.13	89.6	9400	1100	
29			28.0	10	10.37	91.8	13000	4900	
30			49.8	11	10.08	90.8	49000	10900	
31			53.0	11.5	10.01	91.4	17200	3100	

APPENDIX B (CONTINUED)

Tabulation
of
Stream Flows and Laboratory Data

Date	Station Number	Stream Mile	River Disch. cfs	Water Temp. °C	Dissolved Oxygen ppm	Percent D.O. satur.	MPN per 100 ml	E.Coli per 100 ml	Remarks
			x1000						
	Mississippi River								
1961									
10-23	#14 R	483.5	28.4	12	9.14	84.6	13000	2000	West Channel
24			26.8	12	8.71	80.6	14100	3300	
25			27.4	12	9.11	84.3	17200	3300	
26			27.7	10.5	9.67	86.3	7900	2300	
27			26.1	10.5	9.53	85.1	24000	4900	
28			25.2	10	10.19	90.2	4900	1100	
29			28.0	10	10.20	90.3	4900	3300	
30			49.8	11	9.74	87.7	130000	2300	
31			53.0	11.5	9.70	88.6	49000	7900	
	Section Mean Values								
	Oct. 23-29			11.0	9.62	86.4	9500	2500	
	Oct. 23-31			10.9	9.68	87.2	16900	3050	
10-23	#15	483.0	28.4				-	-	Rock Island Water Works Intake
24			26.8				-	-	
25			27.4				-	-	
26			27.7				7900	1100	
27			26.1				24000	2300	
28			25.2				10900	1700	
29			28.0				4600	800	
30			49.8				7900	500	
31			53.0				13000	2300	
	Oct. 26-29 mean						11000	1500	
	Oct. 26-31 mean						11400	1400	

APPENDIX C

Tabulation of Sampling Stations

Station Number	Stream Mile	Remarks
1	521.6	Mississippi River about 1.3 miles above Fulton Highway Bridge.
2	(opposite) 517.5	Head of Beaver Slough, about 100 yards below effluence from Mississippi.
3	---	Beaver Slough, 1-1/4 miles below (2), at upstream and of Clinton Corn Products property.
4	---	Beaver Slough 1.4 miles below (3), and just below confluence with Mill Creek.
5	(opposite) 512.8	Beaver Slough, about 100 yards above mouth.
6	512.5	Mississippi River just above Camanche.
7	507.1	Mississippi River just above confluence with Wapsipinicon River.
7-a	---	Wapsipinicon River at Iowa State Highway 67, about 2-1/2 miles from mouth.
8	501.0	Mississippi River one mile below Princeton, Iowa gage.

APPENDIX C (CONTINUED)

Tabulation of Sampling Stations

Station Number	Stream Mile	Remarks
9	492.5	Mississippi River at confluence with Spencer Creek, 3/4 mile below Dam No. 14.
10	489.0	Mississippi River, 1/2 mile downstream from south and Winnebago Island.
11	488.5	Intake, East Moline Waterworks.
12	(opposite) 486.0	Intake, Moline Waterworks, near head of Sylvan Slough.
13	484.5	Intake, Davenport Water Co.
14	483.5	Mississippi River at International Milling Company, Davenport.
15	483.0	Intake, Rock Island Waterworks just above Dam No. 15.

APPENDIX D

ATTENDANCE ROSTER

Conference on Interstate Pollution

Clinton, Iowa

March 8, 1962

Aernt, A. A.	Staff Engineer Aluminum Company of America Davenport, Iowa
Balmer, Robert R.	du Pont de Nemours and Company Wilmington, Delaware
Baird, Jim	Reporter Morning Democrat Davenport, Iowa
Beal, E. S.	President Collis Company Clinton, Iowa
Bendixen, H. A.	President Clinton Corn Processing Company Clinton, Iowa
Berk, Ivan P.	Engineer Federal Power Commission Chicago, Illinois
Birge, Dr. Jackson P.	Regional Health Officer Illinois Department of Health Rock Island, Illinois
Birkhead, R. L.	Chief, Industrial Engineer Curtis Companies, Inc. Clinton, Iowa
Bisdorf, Hazel M.	President League of Women Voters Clinton, Iowa
Bledsoe, Ruth	Reporter Clinton-Herald Clinton, Iowa
Boka, Stanley D.	Councilman City Council Clinton, Iowa

Boers, Lewis M.	Waters Supervisor Iowa Conservation Commission Des Moines, Iowa
Busch, William	Sanitary Engineer Illinois Sanitary Water Board Rock Island, Illinois
Carbine, W. F.	Bureau of Commercial Fisheries Ann Arbor, Michigan
Carley, Mrs. Richard	Vice President League of Women Voters Morrison, Illinois
Carlsen, John W.	Chairman, Upper Mississippi River, Clean Water Committee, I.W.L.A. Clinton, Iowa
Chamberlain, V. L.	Field Engineer Portland Cement Association Des Moines, Iowa
Chamberlain, William H.	Assistant to Governor of Illinois Springfield, Illinois
Clare, Herbert C.	U. S. Public Health Service Region VI Kansas City, Missouri
Clark, Hugh K.	du Pont de Nemours and Company Wilmington, Delaware
Clausen, Harold W.	Clinton Park Board Commission Clinton, Iowa
Coffey, Phillip	U. S. Public Health Service Cincinnati, Ohio
Crockett, D. R.	Manager Swift and Company Clinton, Iowa
Crowley, Orville E.	Clinton Planning Commission Clinton, Iowa
Dall, A. H.	Mayor City of Clinton Clinton, Iowa

DeKock, Duane E.	Executive Secretary Iowa Division, I.W.L.A. Des Moines, Iowa
Domsalloi, Harold H.	Councilman City of Clinton Clinton, Iowa
Duggleby, Paul W.	Chief Utilities Rock Island Arsenal Rock Island, Illinois
Grounds, Harry C.	Sanitary Engineer Illinois Department of Health Rock Island, Illinois
Grund, Mrs. Arthur	League of Women Voters Clinton, Iowa
Eaton, Dexter W.	Councilman City Council Clinton, Iowa
Edelman, Sidney	U.S. Department of Health, Education & Welfare Washington, D.C.
Erickson, F. K.	U. S. Public Health Service Region VI Kansas City, Missouri
Fetzer, W. R.	754 - 5th Avenue, South Clinton, Iowa
Flattery, Timothy	Area Engineer Soil Conservation Service Sterling, Illinois
Fude, Laura	Recording Secretary Anne Ken Chapter, I.W.L.A. Davenport, Iowa
Gardiner, Donald M.	Director, Health and Safety U.S. Atomic Energy Commission Argonne, Illinois
Garrett, Jack T.	Water Pollution Abatement Advisor Monsanto Chemical Company St. Louis, Missouri
Geiger, Charles H., Jr.	Chemical Engineer Clinton Corn Processing Company Clinton, Iowa

Gillespie, Joe	Plant Manager Monsanto Chemical Company Muscatine, Iowa
Gould, Fred M.	City Coordinator City of Clinton Clinton, Iowa
Granville, Orelin K.	Assistant Chief Appraiser, F.H.A. Des Moines, Iowa
Grantz, Lloyd B.	Administrative Superintendent Water Department Moline, Illinois
Grooms, C. V.	Corresponding Secretary I.W.L.A. Clinton, Iowa
Gustafsson, R. H.	Assistant Manager Engineering Clinton Corn Processing Company Clinton, Iowa
Halsrud, O. M.	City Attorney City of Comanche Clinton, Iowa
Hannah, Henry	Conservation Investigator Illinois Department of Conservation Moline, Illinois
Hannah, Hugh H.	Public Relations Manager Alcoa Bettendorf, Iowa
Hansen, Joe W.	Superintendent of Water & Sewer City of East Moline East Moline, Illinois
Hennessy, Colonel R. L.	District Engineer Corps of Engineers Rock Island, Illinois
Hirsch, Jack L.	Division Bridge Engineer U.S. Bureau of Public Roads Springfield, Illinois
Houser, Paul J.	Director Division of Public Health Engineering Iowa State Department of Health Des Moines, Iowa

Howe, Merlin R.	Conservation Inspector Illinois Department of Conservation Morrison, Illinois
Howes, Ed	Clinton Planning Commission Clinton, Iowa
Hunsinger, Richard G.	U. S. Public Health Service Region VI Kansas City, Missouri
Jacobs, H. L.	Principal Waste Consultant du Pont de Nemours Company Wilmington, Delaware
Jacobsen, R. T.	Corps of Engineers Rock Island, Illinois
Johnson, C. F.	Engine Sales Climax Engine Manufacturing Company Clinton, Iowa
Jurgensen, R. P.	Senior Vice-President Clinton Corn Processing Company Clinton, Iowa
Kelsay, Stanley L.	District Manager National By-Products, Inc. Clinton, Iowa
Kerr, R. H.	Construction Engineer Climax Engine Mfg. Company Clinton, Iowa
King, C. H.	Councilman City Council Clinton, Iowa
Kittrell, F. W.	U. S. Public Health Service Cincinnati, Ohio
Klassen, C. W.	Technical Secretary Illinois Sanitary Water Board Springfield, Illinois
Klein, Robert J.	Superintendent City of Moline, Sewage Department Moline, Illinois
Koll, Richard L.	Production Manager The Pillsbury Company Clinton, Iowa

Kroeger, Mr. & Mrs. A. H.	Health and Sanitation I.W.L.A. Bettendorf, Iowa
Kuh, Peter	U. S. Public Health Service Washington, D.C.
Lackors, M. R.	Executive Director Clinton Chamber of Commerce Clinton, Iowa
Ladehfb, Gus K.	President Clinton Engine Company Clinton, Iowa
Lovrien, Howard	Conservation Officer Iowa Conservation Commission Clinton, Iowa
McAllister, R. M.	Public Health Engineer Iowa State Department of Health Washington, Iowa
McDonald, James O.	U.S. Public Health Service Chicago, Illinois
McDonald, Wilfred E.	President Clinton Board of Realtors Clinton, Iowa
McCool, G. W., Jr.	Employees Relations Superintendent du Pont de Nemours Company Clinton, Iowa
McLaughlin, P. L.	Sanitary Engineer Ninth Naval District Great Lakes, Illinois
Manning, James F.	Plant Manager, Clinton Division Dairypak Bluter, Inc. Clinton, Iowa
Marx, E. R.	Plant Engineer John Deere Harvester Works East Moline, Illinois
Mebus, William C.	Bureau of Land Management Washington, D,C,
Massall, Lt. Col. Charles M.	Post Engineer Corps of Engineers Rock Island, Illinois

Miles, Morris A.	Chemist Moline Water Works Moline, Illinois
Mooney, Roy H.	Councilman Comanche, Iowa
Morehouse, Michael L.	Assistant United States Attorney Chicago, Illinois
Munson, A. J.	Clinton, Iowa
Ney, Ralph	Princeton, Iowa
Niebuhr, Eugene F.	City Engineer City of Clinton Clinton, Iowa
Nord, Robert C.	Survey Director Upper Mississippi River Conservation Commission LaCrosse, Wisconsin
Nord, Warren H.	Bureau of Sport Fisheries & Wildlife Minneapolis, Minnesota
Peterson, Charles A.	Industrial Hygienist Deere and Company Moline, Illinois
Poston, H. W.	U. S. Public Health Service Region V Chicago, Illinois
Prins, William L.	Sinissippi Rod and Gun Rock Falls, Illinois
Rademacher, J. M.	U. S. Public Health Service Region V Chicago, Illinois
Raffensperger, Gene	Reporter Des Moines Register Davenport, Iowa
Robertston, Mrs. Inez	Secretary League of Women Voters Morrison, Illinois
Rahfs, Elsie	Member Anne Ken Chapter, I.W.L.A. Davenport, Iowa

Seaman, D. S	President Clinton Wire Cloth Company Clinton, Iowa
Schariff, Sylvia	Director Anne Ken Chapter, I.W.L.A. Davenport, Iowa
Schliekelman, R. J.	Public Health Engineer Iowa State Department of Health Des Moines, Iowa
Schulz, Alfred A.	Princeton, Iowa
Shay, J. R.	Public Health Engineer Iowa State Department of Health Des Moines, Iowa
Shipma, James W.	Superintendent of Water Works & Sewage Fulton, Illinois
Smith, Homer I.	Chairman Airport Committee Clinton, Iowa
Smith, Darrell G.	Councilman City of Clinton Clinton, Iowa
Spere, C. A.	Marquete Company Clinton, Iowa
Starr, Byron E.	Councilman City of Clinton Clinton, Iowa
Stephenson, M. V.	Public Health Engineer Iowa State Department of Health Manchester, Iowa
Stein, Murray	U. S. Public Health Service Washington, D.C.
Stigall, Walton B.	Outdoor Writer Sterling Gazette Rock Falls, Illinois
Strunk, Paul L.	Councilman City of Clinton Clinton, Iowa
Stuard, J. F.	Works Engineer du Pont de Nemours & Co. Clinton, Iowa

Sturdy, LCDR O. T.	U. S. Coast Guard Dubuque, Iowa
Sullivan, Wendell E.	Clean Streams of Rock Island Moline, Illinois
Swarts, Harold Eugene	President Moline Conservation and Rock Island Company East Moline, Illinois
Townley, Donald A.	U. S. Public Health Service Region VI Kansas City, Missouri
Ward, John, Jr.	Associate Consoer Townsend and Associates Chicago, Illinois
Warren, John G.	Outdoor Editor Moline Daily Dispatch Moline, Illinois
Weeber, W. K.	Regional Engineer Illinois Department of Public Health Rock Island, Illinois
Welch, T. H.	Small Business Administration Des Moines, Iowa
Westgate, Lewis	Mayor City of Comanche, Iowa Comanche, Iowa
White, Lee F.	News Director Radio Station KROS Clinton, Iowa
Wolfe, J. C.	District Manager Interstate Power Company Clinton, Iowa
Wynes, Robert A.	Technical Assistant to the Production Manager Clinton Corn Processing Company Clinton, Iowa
Rankin, Mrs. Virginia Hough	Court Reporter Kansas City, Missouri

SUMMARY OF CONFERENCE

POLLUTION OF THE INTERSTATE WATERS
of the
MISSISSIPPI RIVER (CLINTON AREA)
(Iowa-Illinois)

March 8, 1962

The Mississippi River forms a part of the State boundary between Iowa and Illinois in its approximately thirty-nine mile reach between the Locks and Dams numbered 13 and 15 (as designated by the U.S. Corps of Engineers). The river waters of this reach are used for a number of beneficial purposes including industrial application, source of public water supply, fishing, boating and other recreation.

On the basis of reports, surveys and studies the Secretary of Health, Education, and Welfare having reason to believe that pollution which endangers the health or welfare of persons in a State other than that in which the discharges originate is occurring, called a conference in the matter of pollution of the interstate waters of the Mississippi River (Iowa-Illinois) between Lock and Dam 13 between Iowa and Illinois, and Lock and Dam 15 between Iowa and Illinois, under the provisions of section 8 of the Federal Water Pollution Control Act (33 U.S.C. 466 et seq.). The conference was held on March 8, 1962, in the Oak Room of the Sheraton-Lafayette Hotel, Clinton, Iowa.

The following conferees representing the official State water pollution control agencies of Iowa and Illinois, and the U.S. Department of Health, Education, and Welfare, attended the conference:

Paul J. Houser	Iowa Department of Health Des Moines, Iowa

C. W. Klassen	Illinois Sanitary Water Board Springfield, Illinois
H. W. Poston	U.S. Department of Health, Education, and Welfare Chicago, Illinois
Murray Stein, Chairman	U.S. Department of Health, Education, and Welfare Washington, D. C.

Also participating in the conference were the following:

A. H. Dell	Mayor City of Clinton Clinton, Iowa
Lewis Westgate	Mayor City of Camanche Camanche, Iowa
A. A. Aerni	Aluminum Company of America Riverdale, Iowa
Edwin S. Beal	Collis Company Clinton, Iowa
H. A. Bendixen	Clinton Corn Processing Company Clinton, Iowa
W. F. Carbine	U.S. Bureau of Commercial Fisheries Ann Arbor, Michigan
Herbert C. Clare	U.S. Department of Health, Education, and Welfare Kansas City, Missouri
Phil Coffey	U.S. Department of Health, Education, and Welfare Cincinnati, Ohio
Dale R. Crockett	Swift and Company Clinton, Iowa
C. V. Groome	Clinton Wire Cloth Company Clinton, Iowa
C. V. Groome	Izaak Walton League Clinton, Iowa

Colonel Richard Hennessy	U.S. Corps of Engineers Rock Island, Illinois
R. P. Jurgensen	Clinton Corn Processing Company Clinton, Iowa
Richard Koll	Pillsbury Company Clinton, Iowa
Adolph Kroeger	Izaak Walton League Davenport, Iowa
James Manning	Clinton Products Manufacturing of Dairypak Bluter, Inc. Clinton, Iowa
Lt. Colonel Charles Messall	U.S. Corps of Engineers Rock Island, Illinois
Warren Nord	U.S. Bureau of Sport Fisheries & Wildlife Minneaspolis, Minnesota
John Rademacher	U.S. Department of Health, Education, and Welfare Chicago, Illinois
J. F. Stuard, Jr.	E. I. duPont de Nemours & Company, Inc. Clinton, Iowa
H. E. Swartz	Moline Conservation Club Moline, Illinois
J. C. Wolf	Interstate Power Company Clinton, Iowa

The Chairman of the Conference pointed out that:

1. Under the Federal Water Pollution Control Act pollution of interstate waters which endangers the health or welfare of persons in a State other than that in which the discharges originate is subject to abatement under procedures prescribed by section 8 of the Federal Act.

2. The first step of this procedure is the calling of a conference.

3. The purpose of the conference is to bring the States and the U.S. Department of Health, Education, and Welfare together to lay a basis for

future action by all parties concerned and to give the States and localities an opportunity to take any remedial action under State and local law, which may be indicated.

In the light of conference discussions, the following conclusions were reached and recommendations made:

1. The waters of the Mississippi River from Lock and Dam 13 and Lock to Dam 15 (U.S. Corps of Engineers' designation) form part of the State boundary between Iowa and Illinois and are interstate waters within the meaning of the Federal Water Pollution Control Act.

2. Pollution subject to abatement under the Federal Water Pollution Control Act exists. The discharges causing and contributing to the pollution come from various industrial and municipal sources including but not limited to the City of Clinton, Iowa, City of Camanche, Iowa, Clinton Corn Processing Company, Collis Company, Pillsbury, Company, Curtis Companies, Inc., Swift and Company, Clinton Wire Cloth Company, Dairypak Company, Maquoketa Company, Clinton Rendering Company and various municipal sources in Illinois. This pollution interferes with uses of the river for public and industrial water supplies, commercial and sport fishing, recreation purposes, and the aesthetic and passive enjoyment of the river in the Clinton-Quad Cities area. Recognition was given to the reservation of the conferee from Illinois, that the data presented at the conference do not necessarily convince him of the existence of interstate pollution.

3. Adequacy of some of the measures taken to date to control pollution has not been tested. Specifically, no study has been made of waste disposal practices of the E.I. duPont de Nemours Company. However, it is the determination of the Iowa Department of Health that the duPont Company's disposal

facilities are adequate. Treatment will be considered adequate if it provides an effluent of a character which, when discharged to the receiving waters, will not endanger the health or welfare of persons.

4. Failure to install necessary treatment works and remedial facilities has resulted in delays in the abatement of pollution.

5. Cognizance was taken of the program of the State of Iowa in dealing with the problem and the cooperative attitude expressed by the municipalities and industries and the Federal installations involved. Cognizance was also taken of the progressive pollution abatement program of the Aluminum Corporation of America at Riverdale, Iowa, in installing primary and secondary treatment and chlorination to furnish a clean and innocuous effluent.

6. The conferees have every confidence in the Iowa and Illinois programs for abatement and control of pollution and believe that in the issuance of permits and the development of their State programs much will be accomplished including the purposes of this conference. The conferees found the orders of the Iowa Department of Health of December 20, 1961 to be reasonable and fair in their approaches to the problem and adopted the schedules presented to them by the Iowa conferee. These schedules are as follows:

Clinton, Iowa:

A. Contract for construction to be awarded for Section one of project on or before October 1, 1962.
   1. Interceptor sewer from plant site along Beaver Slough to 5th Street or above;
   2. Interceptor in Mill Creek Valley to divert a portion of sewage now discharged via 1st Avenue outlet;

3. Primary treatment facilities adequate for this portion of sewage collected.

B. Contract for construction to be awarded for Section two of the project on or before October 1, 1965.

1. Remaining portion of the interceptor sewer extending upstream to the uppermost existing outlet discharging into the river;

2. Primary treatment facilities adequate for sewage collected.

C. The City has determined the volume and character of wastes to be discharged into the municipal sewer system from industries not now connected.

D. Progress reports are to be submitted by the City to the Iowa Department of Health, October 15, 1962 and July 1, 1963 and at approximately six-month intervals thereafter until contract has been awarded for second section of the project.

Camanche, Iowa:

Contract for construction of the sewage treatment plant is to be awarded on or before October 1, 1962.

Clinton Corn Processing Company:

A. Discharge of process wastes containing carbon is to be discontinued on or before July 1, 1963.

B. Proceed immediately with in-plant modifications which will reduce settleable, floatable and dissolved organic solids discharges into the river.

C. On or before October 1, 1965, shall have installed modifications or clarification equipment for practically complete removal of these solids and have further reduced the total organic solids discharged into the river.

D. Domestic sewage is to be discharged into the city sewer when available or separate treatment facilities installed.

E. Progress reports are to be submitted to the Iowa Department of Health on July 15, 1962 and at approximately six-month intervals thereafter.

Collis Company:

A. Discharge of process waste waters in such quantities and concentration that will result in pollution, is to cease.

B. Domestic sewage and process wastes are to be discharged into the municipal sewer when constructed as a part of the city project.

Pillsbury Company:
Curtis Companies, Inc.:
Swift and Company:
Clinton Wire Cloth Company:

A. Discharge domestic sewage and/or process waste waters into a city sewer when available, or,

B. Install separate treatment facilities on or before October 1, 1962.

Dairypak Company and Maquoketa Company have septic tank installations for treatment of sanitary sewage which are considered adequate means of treatment.

Clinton Rendering Company has a septic tank for settling of floor washings. This is considered adequate means of treatment.

7. The State of Iowa will prepare a commensurate program for all other industries and other municipalities on the Iowa side of this reach of the

river to abate existing pollution. Such a program will be considered adequate when it provides for discharge of domestic sewage and/or process waste water into a city sewer when available or if it requires installation of separate adequate treatment facilities on or before October 1, 1962. Adequate treatment by industries and municipalities must provide sufficiently clean and innocuous effluent which, when discharged to the receiving waters, will not endanger the health or welfare of persons in a State other than that in which the discharge originates. The State of Illinois and the Illinois Sanitary Water Board will also adopt a commensurate corrective treatment program.

8. The Department of Health, Education, and Welfare will prepare semi-annual progress reports (based on reports from the State water pollution control agencies) which will be made available to the conferees. These reports will include the progress made under the Iowa Department of Health orders and programs as well as progress and activities of the Illinois Sanitary Water Board.

9. At the request of the State agencies and working in cooperation with them, the Department of Health, Education, and Welfare will, within the limits of its available resources, furnish technical and other assistance.